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R-585-7-3-22

A FIELD TRIP REPORT FOR
MILLER CHEMICAL AND FERTILIZER CORPORATION
PREPARED UNDER

TDD NO. F3-8306-17
EPA NO M0123
CONTRACT NO. 68-01-6699

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

MARCH 11, 1985

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

REVIEWED BY

APPROVED BY

(b) (4)

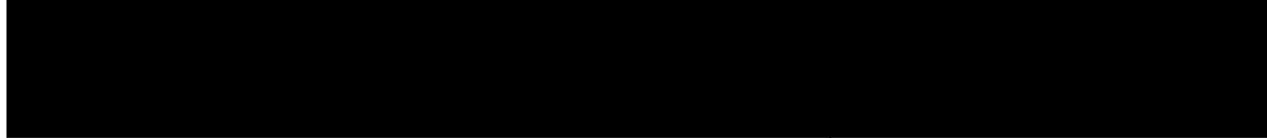
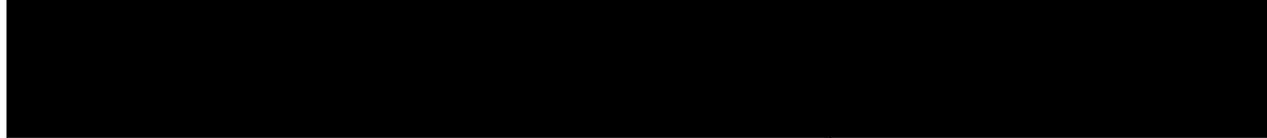
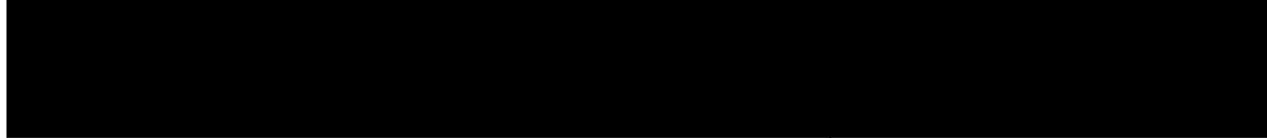


TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
1.0	INTRODUCTION	1-1
1.1	AUTHORIZATION	1-1
1.2	SCOPE OF WORK	1-1
1.3	SUMMARY	1-1
2.0	FIELD TRIP REPORT	2-1
2.1	SUMMARY	2-1
2.2	PERSONS CONTACTED	2-1
2.2.1	PRIOR TO FIELD TRIP	2-1
2.2.2	AT THE SITE	2-1
2.3	SAMPLE LOG	2-2
2.4	SITE OBSERVATIONS	2-3
2.5	PHOTOGRAPH LOG	
3.0	LABORATORY DATA	3-1
3.1	SAMPLE DATA SUMMARY	3-1
3.2	QUALITY ASSURANCE REVIEW	3-2
<u>APPENDICES</u>		
A	1.0 COPY OF TDD	A-1
B	1.0 MAPS/SKETCHES 1.1 SITE LOCATION MAP 1.2 SITE SKETCH 1.3 SAMPLE LOCATION MAP 1.4 PHOTOGRAPH LOCATION MAP	B-1
C	1.0 SAMPLE BLENDING PROCEDURE	C-1
D	1.0 QUALITY ASSURANCE SUPPORT DOCUMENTATION	D-1
E	1.0 LABORATORY DATA PACKAGE	E-1

SECTION 1

1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract 68-01-6699. This specific report was prepared in accordance with Technical Directive Document No. F3-8306-17 for the Miller Chemical and Fertilizer Corporation site located in Whiteford, Maryland.

1.2 Scope Of Work

NUS Corporation was tasked to perform a site inspection including dioxin (2,3,7,8-TCDD) screening and priority pollutant sampling of the Miller Chemical and Fertilizer Corporation.

1.3 Summary

NUS Corporation FIT III site team leaders accompanied EPA Region III representatives to a meeting with Center of Disease Control (CDC) personnel in Atlanta, Georgia. The purpose of this meeting was to ensure that the sampling and Quality Control protocol to be used for dioxin screening in Region III would be acceptable to CDC, thus ensuring that the results of any sample analysis would be deemed valid by CDC.

Upon return to Philadelphia, NUS FIT III team leaders attended a meeting of the EPA Region III Dioxin Task Force to discuss the CDC meeting and to finalize arrangements for the upcoming site inspections, which included dioxin screening.

Several meetings were held at the NUS FIT III office in order to brief site team members on the special protocol and equipment needs for dioxin screening inspections.

NUS FIT III representatives Thomas Fromm, Bill Wentworth, and Garth Glenn, along with U.S. EPA and state of Maryland personnel visited the Miller Chemical and Fertilizer Corporation site on June 20, 1983 to meet with company representatives and conduct a preliminary walk-through of the site. At this meeting, the areas where 2,4-Dichlorophenoxyacetic Acid (2,4-D) was handled in the past were identified on site sketches and aerial photographs. A chronology of 2,4-D handling was also provided at this time detailing handling time spans as well as quantities. Following this meeting a visual inspection took place, during which possible sample locations were selected. Finally, a site inspection with sampling included was scheduled for 8:30 AM on June 22, 1983.

FIT III team members Thomas Fromm, William Wentworth, Garth Glenn, Eugene Dennis, David Walker, Jeffrey Case, and Bruce Pluta arrived on site at 8:30 AM on June 22, 1983 to conduct the scheduled site inspection. A total of 17 soil samples were obtained to be analyzed for 2,3,7,8-TCDD and 5 sediment samples were collected to be analyzed for priority pollutants. Split samples were provided to Miller Chemical. The results of these analyses are summarized in section 3 of this report.

ORIGINAL
(Red)

SECTION 2

JOURNAL

2.0 FIELD TRIP REPORT

2.1 Summary

NUS FIT III conducted a site inspection as tasked in TDD No. F3-8306-17 on June 22, 1983. The team consisted of Thomas Fromm, William Wentworth, Garth Glenn, David Walker, Eugene Dennis, Jeff Case, and Bruce Pluta. Environmental conditions on this date were very hot (85° to 90°) and humid.

2.2 Persons Contacted

2.2.1 Prior to Field Trip

Neil Swanson
U. S. Environmental Protection Agency
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19106
215-597-3437

2.2.2 At the Site

Neil Swanson
U. S. Environmental Protection Agency
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19106

Peter Schual
U. S. Environmental Protection Agency
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19106

Janet Luffy
U. S. Environmental Protection Agency
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19106
215-593-437

Akskay Vidjarni
Miller Chemical & Fertilizer Corp.
Whiteford, MD
717-632-8921

Howard Harvey
Miller Chemical & Fertilizer Corp.
Whiteford, MD
717-632-8921

Howard Dye
MD Dept. of Health and Mental Hygiene
Baltimore, MD
301-383-6650

Paul Thomas
MD Dept. of Health and Mental Hygiene
Baltimore, MD
301-383-6650

TDD Number F3-8366-17

EPA Number

2.3 SAMPLE LOG

Site Name W - 03

STATION NUMBER Organic Inorganic High Hazard	2/3, 7, 8 TCM	TAG NUMBER	PHASE/ CONC.	SAMPLE DESCRIPTION	DATE	TIME	pH	COMMENTS/OBSERVATIONS	LABORATORY
m-03-01	3-16696	SOLID	AUGER 1	4/22/83	1140				WRIGHT ST. BZKLM L
m-03-02	3-16697		AUGER 2		1200				
m-03-03	3-16698		AUGER 3		1217				
m-03-04	3-16699		AUGER 4		1235				
m-03-05	3-16700		AUGER 5		1048				
m-03-06	3-168168		AUGER 6		1120				
m-03-07	3-16869		BLANK SOIL "TO BE" BLANK SOIL SPIKED"		1130				
m-03-08	3-16870				1130				
m-03-09	3-16871		AUGER 7		1315				
m-03-10	3-16872		SEDIMENT UPSTREAM		1340				
m-03-11	3-16873		SEDIMENT MIDDLE		1400				
m-03-12	3-16874		SED. UP CONFLUENT		1430				
m-03-13	3-16875	↓	SED. DOWN CONFLUENT		1445				
m-03-14	3-16876	AQ.	DECON. RINNATE	↓	1340				
m-03-17	3-24907	SOLID	PERFORMANCE AUDIT	6/30/83	1015				
m-03-16	3-24908	SOLID	PERFORMANCE AUDIT	6/30/83	1000				
m-04-080	3-16792	SOLID	QA DUPLICATE TRAN.	6/23/83	1450				↓

TOD Number F3-8306-17
EPA Number

2.3 SAMPLE LOG

Site Name M - 03

2.4 Site Observations

The following information was obtained during the meeting on June 20, 1983.

- o 2,4-D was blended at this site in 500 gallon batches, for a period of 3 to 5 years.
- o In the peak years of operation, ten 500-gallon batches were blended.
- o The mix consisted of 2 lbs./gallon of water.
- o There were no off spec batches, as more water or more 2,4-D was added to adjust concentration of product.
- o The only by-product of this operation was the empty 2,4-D drums which were resold.
- o 2,4-D was transported to the site by truck and stored in the 2,4-D blending area.
- o The building where 2,4-D was blended has been demolished and buried, and the surrounding area is designated as a non-molest area.
- o A chromium, copper, zinc-based fungicide (6-5-8) was also prepared on site at a peak of 50 tons/year.
- o An arsenic problem resulted from washing the blending tanks used in the 6-5-8 operation when the wash water drained to nearby surface waters.
- o The state of Maryland has addressed this problem in the past.
- o The 6-5-8 fungicide building has been demolished; all that remains is a concrete slab.
- o Two ponds on site were used by a neighboring company (Whiteford Packing) to dispose of their waste water.

- o In response to a state request, these ponds were backfilled with the 2,4-D building demolition material. The water in the ponds was drained into a nearby stream.

The following observations were made during the site walk:

- o The location of 2,4-D handling area is still identifiable, the tree line is basically the same as it was during years of concern.
- o The road that was used to transport material is also somewhat visible.

The following observations were made on June 22, 1983 during the site inspection:

- o While walking to the 2,4-D area, a semi-buried concrete vault with metal cover labeled "Dangerous Explosives" was observed. When asked about the box, company officials stated that there were 2 such boxes in the area, 1 containing dynamite and the other blasting caps.
- o Mr. Howard Harvey located the area that, to the best of his recollection, was where the 2,4-D building was located.
- o Mr. Harvey also stated that the building was pushed into 1 of the former ponds to fill it in as requested by the state.
- o The area of the old building was staked out and sample locations picked on 4 sides and the center.
- o Two sample locations downgradient of the building area, in the direction of the old pond area, were selected.
- o A location upgradient of the building area in an undisturbed area was selected as a clean soil sample area.

- o Sediment sample locations were located in a drainage ditch upstream of Miller Chemical, downstream of Miller, and up and downstream of the confluence of the drainage ditch and tributary to Scott Creek. (See the Site Sketch in appendix C.)
- o Demolition debris was observed where the old 2,4-D building was suspected to have been located.
- o An auger was used to collect samples, with depths varying, according to refusal, up to 3 feet.
- o All auger sample locations were recorded for future reference by taking distances and bearings from two fixed locations; in this case, telephone poles which paralleled the boundary of the site.
- o All samples were homogenized by blending on site as specified in protocol (See appendix B).

EPA REGION III
SUPERFUND DOCUMENT MANAGEMENT SYSTEM

DOC ID # 426752
PAGE # _____

IMAGERY COVER SHEET
UNSCANNABLE ITEM

Contact the CERCLA Records Center to view this document.

SITE NAME Miller Chemical + Fertilizer
OPERABLE UNIT 00
SECTION/BOX/FOLDER Le/Box 1 / CBI 1

REPORT OR DOCUMENT TITLE Field Trip Report
DATE OF DOCUMENT 3/11/85
DESCRIPTION OF IMAGERY 2.5 Photographic Log
NUMBER AND TYPE OF IMAGERY ITEM(S) 10 photos

ORIGINAL
(Red)

SECTION 3

Site Name: Miller Chemical
TDD No.: F3-8306-17

3.0 LABORATORY DATA

ORIGINAL
(RCD)

3.1 SAMPLE DATA SUMMARY

ORIGINAL
(Red)

APPENDIX A

ORIGINAL
(Red)

1. COST CENTER	REM/FIT ZONE CONTRACT TECHNICAL DIRECTIVE DOCUMENT (TDD)			2. NO
ACCOUNT NO.:				F3-8306-17
3. PRIORITY:	4. ESTIMATE OF TECHNICAL HOURS:	5. EPA SITE ID:	6. COMPLETION DATE:	7. REFERENCE INFO.:
<input checked="" type="checkbox"/> HIGH <input type="checkbox"/> MEDIUM <input type="checkbox"/> LOW	225		Report due 2 months after Sampling results received	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> ATTACHED <input checked="" type="checkbox"/> PICK UP EPA Meetings
4A. ESTIMATE OF SUBCONTRACT COST:		5A. EPA SITE NAME:		
\$400		Miller Chemical & Fertilizer Corp.		
8. GENERAL TASK DESCRIPTION: <u>Conduct PA/SI at subject facility.</u>				
9. SPECIFIC ELEMENTS:				10. INTERIM DEADLINES:
<ol style="list-style-type: none"> 1. Attend preliminary meeting with EPA personnel at subject facility. 2. Develop sampling plan in conjunction with EPA project leader. 3. Coordinate Labs analysis (P.P. & Dioxin). 4. Sample onsite for characterization of dioxin and priority pollutants. 5. Off-site sampling at discretion of EPA project leader. 6. Ship samples under chain of custody to appropriate labs. 7. Dioxin sampling etc. according to EPA/CDC protocol. 8. Submit formal report, PA & SI forms. 				
11. DESIRED REPORT FORM: <input type="checkbox"/> FORMAL REPORT <input type="checkbox"/> LETTER REPORT <input type="checkbox"/> FORMAL BRIEFING <input type="checkbox"/> 9. If sufficient data provide HRS under separate cover (30 additional hours) 10. Subcontract for proper disposal of contaminated clothing and materials from Site Inspection (not to exceed 2 barrels/site).				OTHER (SPECIFY): <u>If time doesn't permit both dioxin and P.P. sampling, conduct dioxin only.</u>
12. COMMENTS:				
13. AUTHORIZING RPO: <u>Linda J. Bonneyan</u> (SIGNATURE)				14. DATE: <u>6/9/83</u>
15. RECEIVED BY: <u>Donald Denner</u> (CONTRACTOR RPM SIGNATURE)				16. DATE: <u>6/10/83</u>

ORIGINAL
(2ed)

APPENDIX B

TABLE I

BREHM LABORATORY, WRIGHT STATE UNIVERSITY, DAYTON, OHIO 45435
 RESULTS OF HRGC-LRMS ANALYSES OF EXTRACTS OF EPA/REGION VII SAMPLES SUBMITTED UNDER VIAR & COMPANY SAS NO. MU3 FOR 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD)

EPA Sample Extract	WSU Sample Extract	Extraction	Cleanup	Sample Weight (grams)	Concentration of TCDD ^a . ($\mu\text{g}/\text{Kg}$)	D.L. ($\mu\text{g}/\text{Kg}$)	Ratio m/z 320/m/z 322	Surrogate Percent Accuracy	Ratio m/z 332/m/z 334	m/z 320	m/z 322	m/z 257	m/z 259	m/z 328	m/z 332	m/z 334
M03-01 3-16696	NUS-1	J	B&C	11.48	N.D.	0.12	--	94	0.72	N-130 ^b	N-500	N-300	N-350	16200	22500	31270
M03-02 3-16697	NUS-2	J	B&C	11.57	N.D.	0.06	--	95	0.73	N-150	N-150	N-200	N-300	16050	22300	30650
M03-03 3-16698	NUS-3	J	B&C	10.51	N.D.	0.05	--	84	0.86	N-200	N-200	N-250	N-200	22400	38500	44530
M03-04 3-16699	NUS-4	J	B&C	10.63	N.D.	0.04	--	89	0.70	N-160	N-160	N-400	N-400	21800	31440	45250
M03-05 3-16700	NUS-5	J	B&C	11.77	N.D.	0.04	--	90	0.82	N-200	N-150	N-300	N-300	25140	39360	48200
M03-06 3-16808	NUS-6	J	B&C	10.77	N.D.	0.03	--	96	0.74	300	240	500	1000	16960	23360	31700
M03-07 3-16869	NUS-7	J	B&C	11.19	0.27	--	0.76	95	0.69	1340	1710	900	1000	14000	18790	27180
M03-08 ^c 3-16870	NUS-8	J	B&C	11.92	1.09	--	0.84	92	0.72	8660	10270	4320	4310	19380	27650	38470
M03-09 3-16871	NUS-9	J	B&C	11.59	N.D.	0.07	--	89	0.71	N-200	N-150	N-300	N-300	13050	19160	26870
M03-10 3-16872	NUS-10	J	B&C	11.96	N.D.	0.07	--	85	0.72	N-200	N-300	N-1000	N-1100	19100	29270	40710
M03-11 3-16873	NUS-11	J	B&C	11.41	N.D.	0.13	--	87	0.70	N-300	N-400	N-1100	N-650	15040	22160	31830
M03-12 3-16874	NUS-12	J	B&C	17.51	N.D.	0.09	--	81	0.77	N-360	N-300	N-1000	N-1000	12780	21310	27100
M03-13 3-16875	NUS-13	J	B&C	11.40	N.D.	0.07	--	79	0.75	N-200	N-250	N-3700	N-1400	16050	27270	36300
M03-14 3-16876	NUS-14	J	B&C	100mL	N.D.	0.01	--	87	0.74	N-380	N-360	N-2000	N-1350	20320	30970	41870
M04-08D 3-16792	NUS-15	J	B&C	1.86	N.D.	0.60	--	84	0.74	N-500	N-400	N-1260	N-1600	25910	40750	55330
M03-16 3-24908	NUS-16	J	B&C	10.89	3.07	--	0.82	82	0.73	27700	33870	14880	14740	22090	35340	48470
M03-17 24907	NUS-17	J	B&C	10.89	3.27	--	0.80	97	0.70	25830	32300	11475	11625	23020	30580	43550
M03-16 ^d 24908 ^e	NUS-0	J	B&C	--	N.D.	0.12	--	96	0.67	N-200	N-300	N-300	N-640	14900	19330	28900
M03-16B 24908 ^e	NUS-16B	J	B&C	10.02	2.86	--	0.83	96	0.85	20220	24290	8615	7950	23820	42040	35580

3.2 Quality Assurance Review

3.2.1 Dioxin Data: Lab Case No. 1855/SAS 629C

ORIGINAL
(Red)

3.2.1.1 Introduction

The findings offered in this report are based upon a general review of all available sample data. Blank analysis, surrogate, matrix spike, duplicate, and performance audit results, calibration standards, and isomer separation standards were examined in detail.

3.2.1.2 Qualifiers

It is recommended that this data package be utilized only with a qualifier stating that the concentration of dioxin in sample M-03-07 is best estimated as 0.26 ug/kg, based upon a total of 4 analyses by 2 laboratories.

3.2.1.3 Findings

Initial results for the background soil sample M-03-07 revealed 0.27 ug/kg dioxin. Since this sampling point was initially assumed to be free of contamination, reanalysis was requested in order to verify that the positive result represented environmental contamination and not a laboratory artifact. Per EPA request, this sample was reanalyzed by the laboratory which performed the original analysis, as well as by a second laboratory. Both results agreed closely with the original findings, and the mean result is listed above.

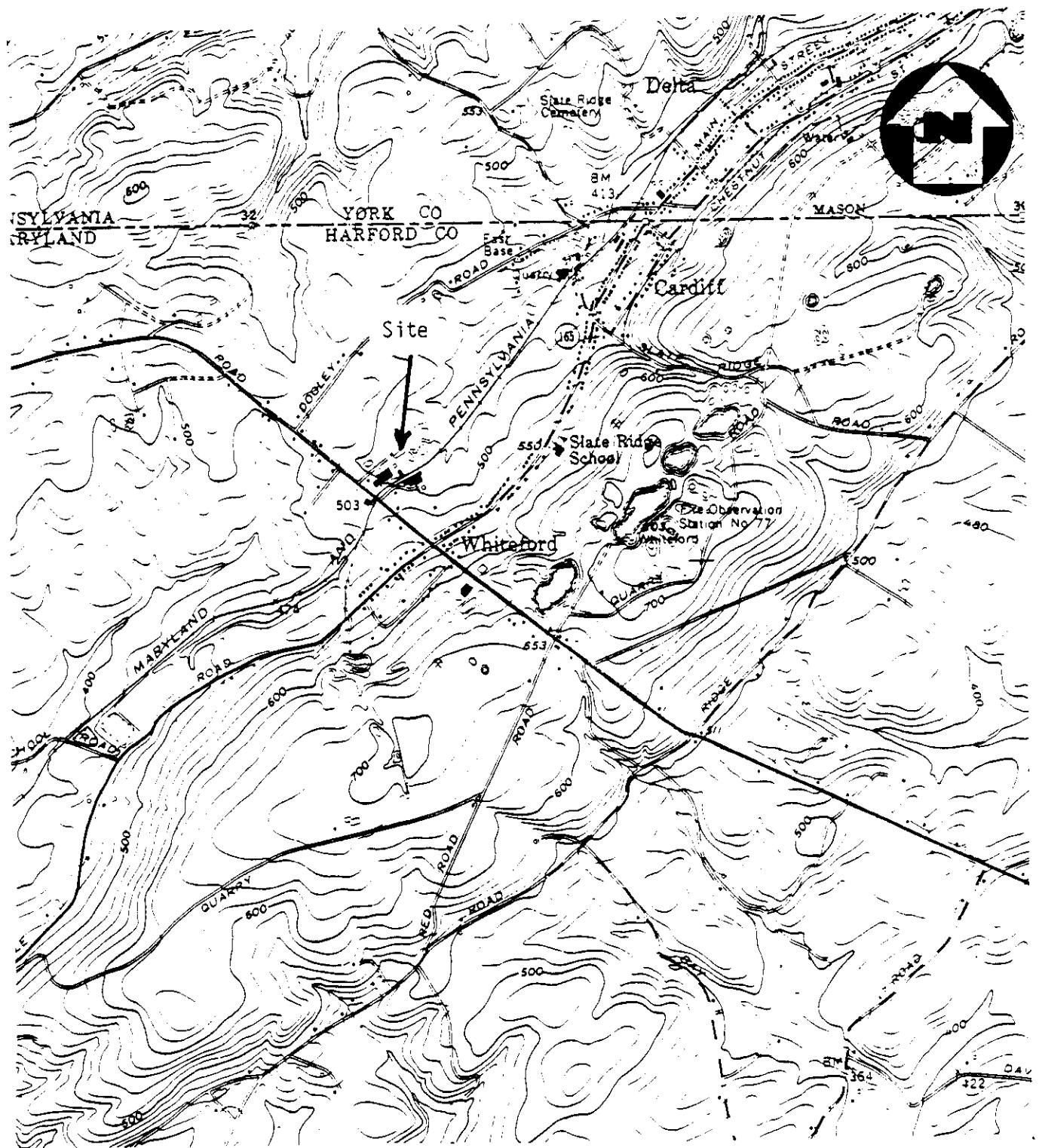
3.2.1.4 Summary

The attached Quality Assurance Review has revealed background soil contamination as the major area of concern. Please see the accompanying Support Documentation Appendix to this report for specifics on this Quality Assurance Review.

Report prepared by: Russell J. Sloboda

Date: Feb. 15, 1984

SITE NAME: Miller Chemical
TDD NO.: F3-8306-17
EPA NO.: M-03
TITLE: Site Location Map
FIGURE NO.: 1



SOURCE: Delta, MD Quadrangle

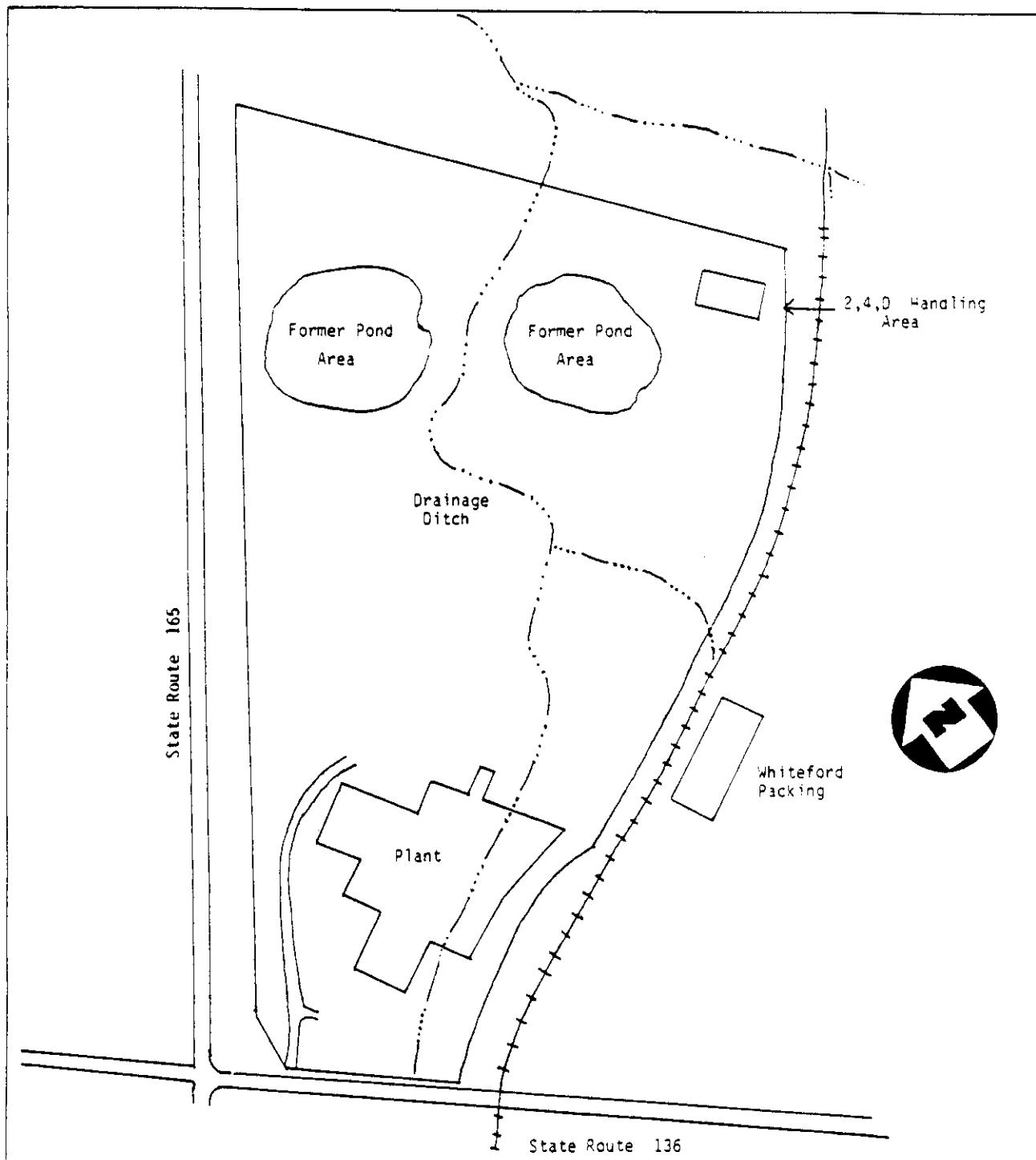
SCALE: 1:24000



A Halliburton Company

SITE NAME: Miller Chemical
TDD NO.: F3-8306-17
EPA NO.: M-03
TITLE: Site Sketch
FIGURE NO.: 2

ORIGINAL
(R-4)

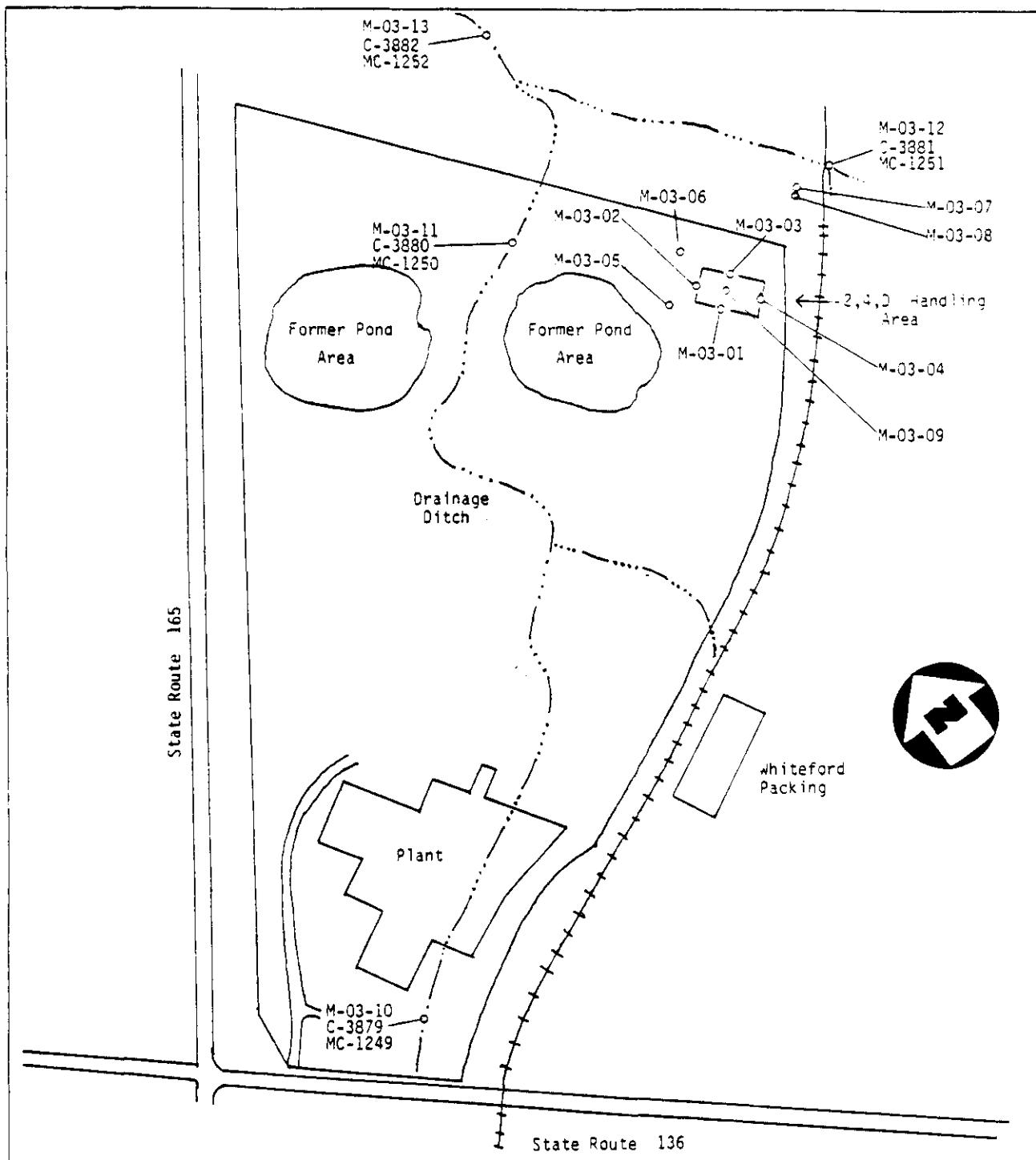


SOURCE: Field Visit 6/22/83

SCALE: Not to Scale

SITE NAME: RITTER CEMENT CO.
TDD NO.: E3-8306-17
EPA NO.: M-03
TITLE: Sample Location Map
FIGURE NO.: 3

ORIGINAL
(Red)

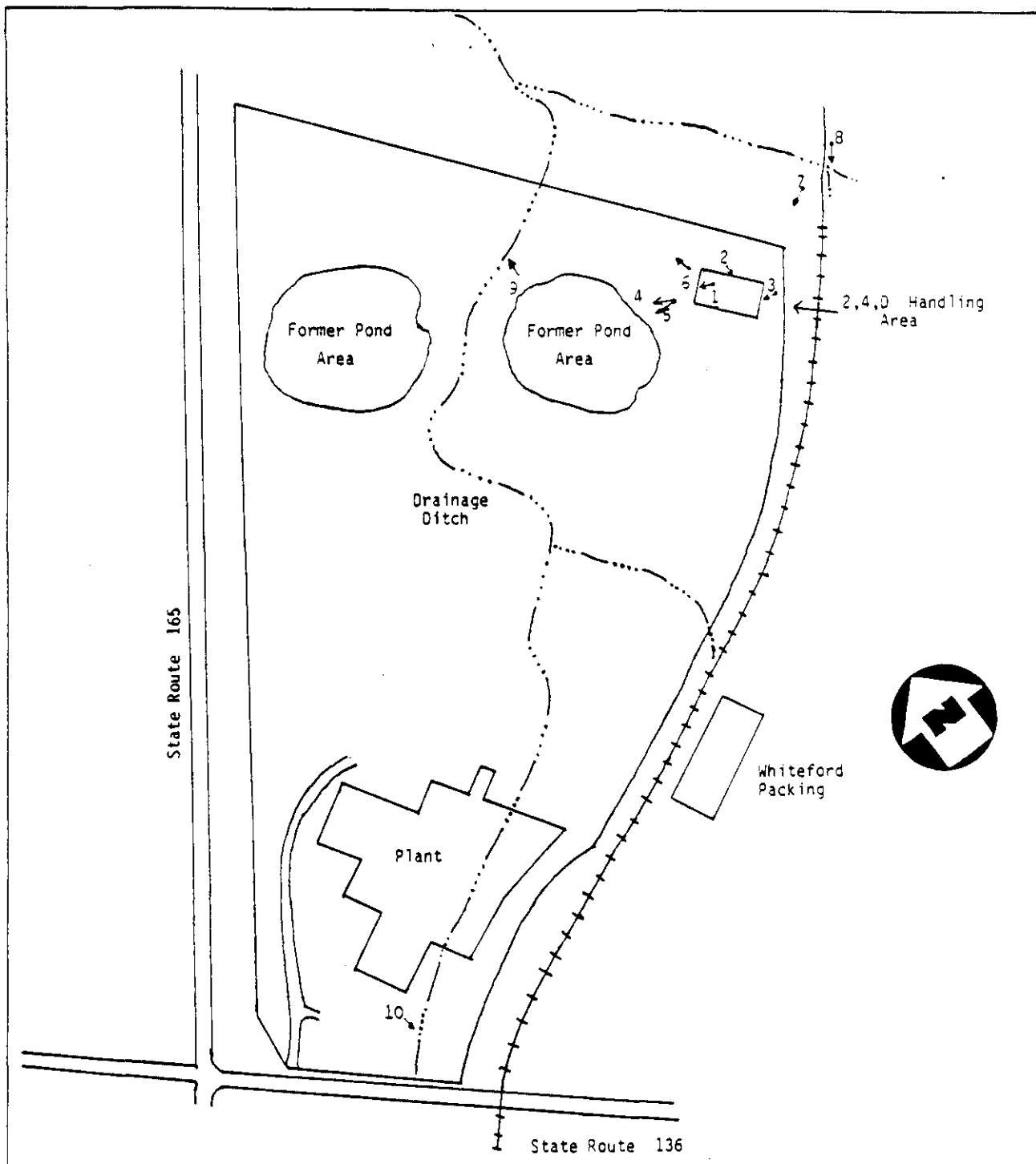


SOURCE: Field Visit 6/22/83

SCALE: Not to Scale

TDD NO.: F3-8306-17
EPA NO.: M-03
TITLE: Photograph Location Map
FIGURE NO.: 4

07/19/84
(314)



SOURCE: Field Visit 6/22/83

SCALE: Not to Scale

ORIGINAL
(Red)

APPENDIX C

Sampling
Blending Procedure

C-585-6-3-54

Samplers take sample in 1 qt. stainless steel blender cup.

Blender cup should be filled no more than 3/4 full.

Note: Attempt to avoid placing stones in the blender cup. Samplers should also break up large clumps of soil.

Sample is then returned to blending station.

Blending procedure will commence as follows:

- 1 Pulse blender five (5) times.
- 2 Invert blender cup several times and shake.
- 3 Repeat this procedure six (6) times for a total of 30 pulses.
- 4 Allow the blender to sit for two to five minutes to allow all dust to settle.

Person who is blending removes right glove to open sample jar, glove is put back on when filling the jar.

Sample will be removed from the blender cup utilizing scoopulas which will be disposed of when the sample jar has been filled.

Right glove is removed for the capping of the jar.

Remove baggie and rubber band and place in designated receptacle.

Sample jar is decontaminated with 1,1,1-trichloroethane if visual contamination is evident.

Sample is then tagged, and processed by the site leader.

Any material remaining in blender cup is disposed of in the waste receptacle.

Blender cup is cleaned with soap and water and scrubbed with brush if necessary.

Blender cup is filled 1/4 to 1/2 full with soapy water and agitated (blended) for 30 seconds.

Cup is then rinsed with distilled water, alcohol, and 1,1,1-TCE. Allow to drip dry.

Sample cup is ready to receive next sample.

ORIGINATOR
(S, J)

APPENDIX D

**QUALITY ASSURANCE REVIEW OF
DIOXIN ANALYSIS LAB DATA PACKAGE**

Case No./SAS No.: 1855/SAS 629C
 Contract No.: [Unknown]
 Contract Laboratory: Wright State Univ.
 Analytical Protocol : June '83 R. VII + Memo
 Reviewer: R. Slaboda
 Review Date: 7/25/93

Applicable Sample No's.: M-03-C1, -02, 3, 4, 5, k, 7
8, 9, 10, 11, 12, 13, 14, M-03-16, M-03-17, M-04-C8E

The dioxin analytical data for this case has been reviewed. The quality assurance evaluation is summarized in the following table:

Reviewer's Evaluation*	Fraction				
	2,3,7,8-TCDD	Other TCDD's	Other chlorinated dibenzodioxins	2,3,7,8-TC dibenzofuran	Other Cl ^{2d} dibenzofurans
Acceptable		NA * *	NA * *	NA * **	NA * **
Acceptable with exception(s)	✓ 1				
Questionable					
Unacceptable					

* Definitions of the evaluation score categories are listed on next page.

This evaluation was based upon an analysis of the review items indicated below:

- | | |
|--|--|
| <input checked="" type="checkbox"/> DATA COMPLETENESS
<input checked="" type="checkbox"/> BLANK ANALYSIS RESULTS
<input checked="" type="checkbox"/> SURROGATE SPIKE RESULTS
<input checked="" type="checkbox"/> MATRIX SPIKE RESULTS
<input checked="" type="checkbox"/> DUPLICATE ANALYSIS RESULTS | <input checked="" type="checkbox"/> QUALITATIVE REQUIREMENTS
<input checked="" type="checkbox"/> CALIBRATION STANDARDS
<input checked="" type="checkbox"/> PERFORMANCE AUDIT RESULTS |
|--|--|

Data review forms are attached for each of the review items indicated above.

Comments: NA * * = Not analyzed for.

1 Please see Blank analysis results

DATA EVALUATION SCORE CATEGORIES

ACCEPTABLE: Data is within established control limits, or the data which is outside established control limits does not affect the validity of the analytical results.

ACCEPTABLE WITH EXCEPTION(S): Data is not completely within established control limits. The deficiencies are identified and specific data is still valid, given certain qualifications which are listed below.

QUESTIONABLE: Data is not within established control limits. The deficiencies bring the validity of the entire data set into question. However, the data validity is neither proved nor disproved by the available information.

UNACCEPTABLE: Data is not within established control limits. The deficiencies imply the results are not meaningful.

SAMPLE NO.	IM-C301	-03-02	-03-03	-03-04	-03-05	-03-06	-03-07	-03-08	-03-09	-03-10	-03-11	-03-12
AB I.D. NO.	NUS1	NUS2	NUS3	NUS4	NUS5	NUS6	NUS7	NUS8	NUS9	NUS10	NUS11	NUS12
MATRIX	Solid											
RUN DATE/TIME	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94	7/14/94
INSTRUMENT I.D. NO.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TABULATED RESULTS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DETECTION LIMITS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SURROGATE ACCURACY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ION AREAS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ION RATIOS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MID CHROMATOGRAMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PREVIOUS RUN AREAS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PREVIOUS RUN CHROS.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
REANALYSIS LOG	MS											
PT.CALIB. R.F./AMTS.	MS											
3 PT.CALIB. MID.CHROS.	MS											
DAILY CALIB. RF/AMTS.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DAILY CALIB. MID.CHROS.	7/14/94	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ISOMER SEPARATION CHROS.	7/14/94	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STANDARD SOURCE	MS											
EXTRACTION WT.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLEANUP METHOD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CALCULATION VOLUMES	**											→
PARTIAL SCAN SPECTRA												
HIGH RESOLUTION DATA												
LAB SPIKE RECOVERY												✓
LAB DUPLICATE												
LAB BLANK												
PERFORMANCE AUDIT SPL.												
INTER-LAB. DUPLICATE												*
SAMPLE BLANK												✓
DECON. RINSATE												
* Also went to Envirolyne under SAS G3OC. Sample from this project.												
* * Injection volumes and final volumes assumed to be as specified in protocol.												
MS = missing required data												

ORIGINAL

15.4

IVW DRIVING COMPETENCE CHECKLIST page 2

* Also went to Envirodyne under SITS 630C. (Sample from different project.)

I^* = lower segment of I not within B_h ,

*⁴ Injection volumes and final volumes
observed to be coagulated in practice

MS = missing required with

N/A = not applicable

Blank Analysis Results

The contaminants found in the blanks are listed below:

300

COMMENTS: No positive results from real samples. However, offsite soil came out positive. Sample is being re-analyzed since this soil was only assumed to be clean, and location of sample was 200 feet offsite in the woods, about 60 feet from railroad tracks and 300 feet from site of 2,4-D blending area which was on site. Note: Date and time of NBS-27 appeared to have been manually altered in the chromatogram. Computer printout Dr. Tiedemann 4/8 indicates the computer carried the run date/time and the information was obtained from the run log which was recorded manually.

SURROGATE SPIKE RECOVERIES

* Asterisked values are outside of QC limits

00001784

Surrogate
compound name:

~~37~~ $T_{C_4} 2.378 - T_{CD}$

Source of QC Limits: Ref. 1: Data Package for this case.

Ref. 2: Instructional Guide for Reviewing GC/MS Data, version (11/5/8)

COMMENTS: No sutler's note /

Matrix Spike Results (spiked by laboratory)

ORIGINAL

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* An asterisk indicates values outside control limits.

Comments: Acceptable recovery.

Duplicate Analysis Results

Control limits: Not established Source of QC Limits:

* An asterisk indicates outliers.

Comments: Acceptable results.

Qualitative Requirements

- A. 1. Isomer Specificity Demonstrated in Documentation? (Y/N) Yes
2. Isomer Specificity Demonstrated in Documentation within 8 hours to all positive sample runs? (Y/N) No
Exceptions: Samples m-0312, 13, 14, 16, m-04-CSL run within 12 hours.

- B. 1. 320/322 Ion Ratio within QC Limits (.67 - .87) for all positives? Y/N Yes Exceptions: None

- C. 1. 320, 322, 257 All maximize together (within 3 sec.)? (Y/N) Y
Exceptions: None

2. S/N greater than 2.5 for each ion? (Y/N) Yes Exceptions: None

- D. Retention time of surrogates and internal standard same as native TCE? (Y/N) Y Exceptions: None; all within 3 seconds.

E. Confirmation Data

1. At least one confirmed per set of 24? (Y/N) Yes Exceptions: ~~for claim, in cover letter confirmation is being performed and results will be provided in the next 4 weeks.~~ Comments: ~~int'l~~
2. High resolution confirmation? (Y/N) No Comments: ~~int'l~~

3. Partial scan confirmation? (Y/N) No

→ Ion Ratios: QC Limits: 320/322 .67 - .87 Sample: _____

320/324 1.58 ± 0.16 _____

257/259 1.03 ± 0.10 _____

194/196 1.54 ± 0.15 _____

160, 161, 194, 196, 257, 259, 320, 322, 324 _____

Comments: Not yet received as of 3/8/83

Calibration Standards

ORIGINAL
(Red)

- Calibration data provided for 3 concentration levels? (Y/N) Y
Exceptions: "No calibration data for concentrations of interest." If laboratory is not meeting requirements, then no audit fails. If audit fails, then RRF < 10% RSD.
- Linearity verified within working range? (RRF < 10% RSD)
Exceptions: No linearity data available.
- Calibration Check data provided for all sample runs? (Y/N) Y
Exceptions: Calibration checks are the only standard provided (not all three required for audit).
- Check standard RRF's within $\pm 10\%$ of multilevel calibrations? (Y/N) N.
Exceptions: Cannot verify. No multilevel data. However, the three calibration checks fall within this extent (E05) - better.
- Average RRF from calibration used in all calculations? (Y/N) (See below.) No. Procedure states information about necessary for the audit results to continue.
Exceptions:
values for RRF give the reported values in Sample M-03-17: $(25.730 \pm 2.000) \times \frac{3.17}{3.17} = 2.27$
 $(30.580 \pm 4.352) \times \frac{3.17}{3.17} = 2.27$
 $(22.220 \pm 2.222) \times \frac{3.17}{3.17} = 2.27$
 $(23.45 \pm 3.500) \times \frac{3.17}{3.17} = 2.27$

Performance Audit Results

Source of performance audit samples: Region VII EPA Soil, Blend #1 by Dr. Kline, U.P. Nevada, for EMIL-LV

Date prepared: 6/28/83 Shelf life (If applicable): NA Matrix: Soil

Interferences Added:

Reference Analysis:

Compound	2374ICDD						
mean value	NE*						
number of measurements	8	(3.33 ± 3.634, 3.23 ± 3.27, 2.76, 3.75)					
standard deviation	NE*						
Number of flammaries	3						

Performance Audit Sample Results:

Sample no. :	M-03-16	M-03-17	M-03-16BT				
compound :	2374ICDD	2374ICDD	2374ICDD				
concentration :	3.07	3.27	2.86				
mean value of audit pair (this batch):	3.17	3.17	-				
this lab's preceding mean (last batch):	NE*	NE*	NE*				
(1.96 σ) control limits for mean (this batch):	NE*	NE*	NE*				
(2.58 σ) control limits for consecutive outliers:	NE*	NE*	NE*				
relative percent difference (RPD) for (this batch) audit pair:	3.27	3.27	7.17				
RPD for this lab's last batch:	NE*	NE*	NE*				
(1.96 σ) control limits for RPD (this batch):	NE*	NE*	NE*				
(2.58 σ) control limits for RPD consecutive:	NE*	NE*	NE*				

* * A double asterisk indicates values beyond 2.58 standard deviations from the mean.
+ Intra-laboratory duplicate of M-03-16.

Comments: * NE = Not established. This was the second audit run. There were insufficient data available for calculation + comparison with audit standard. 1-1-83

Results of M-03-16 audit pair are in general agreement with results of previous audit.

APPENDIX E

WRIGHT STATE

Brehm Laboratory

513/873-2202

Wright State University
Dayton, Ohio 45435

July 27, 1983

ORIGINAL
(Red)

RECEIVED

Mr. R. Richard Thacker
Sample Management Office
Viar & Company, Inc.
300 North Lee Street
Alexandria, Virginia 22314

JUL 20 1983

NUS CORPORATION
REGION III

SENT TO _____

Dear Mr. Thacker:

Submitted herewith is our report of analyses of samples accomplished by the Brehm Laboratory under Viar's Order for Special Analytical Services (SAS) No. 629C, under EPA's Contract Laboratory Program (CLP).

The results of analyses of seventeen (17) samples and associated Q.A. samples are listed in Table 1 which is attached. As we informed Ms. Haas in our telephone conversation of 7/26/83, the results of the partial scan confirmatory analyses of sample number M03-16 (3-24908) will be forwarded to you in the next few days. The additional data reporting requirements requested on the memo from Ms. Haas to NUS Corporation are essentially fulfilled by the format used for each mass chromatogram which includes the date, time and run number which are indicative of the sequence of analyses. Copies of the mass chromatograms resulting from the HRGC-LRMS analyses are attached (Figures 1-25). These include chromatograms which verify the TCDD isomer resolution. Also enclosed herewith are copies of the Sample Tracking Forms and EPA and WSU chain-of-custody.

Sincerely,

Michael E. Taylor

For Thomas O. Tiernan, Ph.D.
Professor of Chemistry and
Director of Brehm Laboratory

TOT/gdg

Attachments

cc: Russ Sloboda, NUS Corporation
Dr. Gareth Pearson, EMSL/LV

RECORDED
(200)

Date: July 7, 1983

To: Dr. Tiernan

From: G. VanNess

Subject: Sample received

Received from: James A. Daley
NUS Corporation
992 Old Eagle School Road Suite 916
Wayne, Pennsylvania 19087

Date Shipped: 6/30/83

Date Received: 7/1/83

Shipped by Federal Express

SAS No. 629C

WSU Sample Number	EPA I.D.	Tag No.	Description	Approx. Quantity	Condition of Sample
NUS-1	M03-01	3-16696	Auger 1	300g	good
NUS-2	M03-02	3-16697	Auger 2	300g	good
NUS-3	M03-03	3-16698	Auger 3	300g	good
NUS-4	M03-04	3-16699	Auger 4	300g	good
NUS-5	M03-05	3-16700	Auger 5	300g	good
NUS-6	M03-06	3-16868	Auger 6	300g	good
NUS-7	M03-07	3-16869	Blank Soil	300g	good
NUS-8	M03-08	3016870	Blank Soil to be spiked by lab	300g	good
NUS-9	M03-09	3-16871	Auger 7	300g	good
NUS-10	M03-10	3-16872	Sediment Upstream	300g	good
NUS-11	M03-11	3-16873	Sediment midstream	300g	good
NUS-12	M03-12	3-16874	Sed. up. confl.	300g	good
NUS-13	M03-13	3-16875	Sed. down confl.	300g	good
NUS-14	M03-14	3-16876	rinsate from decontamination- 1,1,1-trichloroethane/H ₂ O	200mL	good
NUS-15	M04-08D	3-16792	Building #4 Pipe Duplicate mostly solid chemicals	200g	good
NUS-16	M03-16	3-24908	Facility Shipping Area	10g	good
NUS-17	M03-17	3-24907	Facility Shipping Area	10g	good

Chain of custody seals were placed on the strapping tape on shipping containers. However, the use of the seals did not prevent one from opening and re-sealing shipping containers. No SAS Numbers for samples.

TABLE 1

BREHM LABORATORY, WRIGHT STATE UNIVERSITY, DAYTON, OHIO 45435

RESULTS OF HRGC-LRMS ANALYSES OF EXTRACTS OF EPA/REGION VII SAMPLES SUBMITTED UNDER VIAR & COMPANY SAS NO. M03 FOR 2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (TCDD)

EPA Sample Extract	WSU Sample Extract	Extraction	Cleanup	Sample Weight (grams)	Concentration of TCDD ^a . ($\mu\text{g}/\text{Kg}$)	D.L. ($\mu\text{g}/\text{Kg}$)	Ratio m/z 320/m/z 322	Surrogate Percent Accuracy	Ratio m/z 332/m/z 334	m/z 320	m/z 322	m/z 257	m/z 259	m/z 328	m/z 332	m/z 334
M03-01 3-16696	NUS-1	J	B&C	11.48	N.D.	0.12	--	94	0.72	N-130 ^b .	N-500	N-300	N-350	16200	22500	31260
M03-02 3-16697	NUS-2	J	B&C	11.57	N.D.	0.06	--	95	0.73	N-150	N-150	N-200	N-300	16050	22300	30650
M03-03 3-16698	NUS-3	J	B&C	10.51	N.D.	0.05	--	84	0.86	N-200	N-200	N-250	N-200	22400	38500	44530
M03-04 3-16699	NUS-4	J	B&C	10.63	N.D.	0.04	--	89	0.70	N-160	N-160	N-400	N-400	21600	31440	45250
M03-05 3-16700	NUS-5	J	B&C	11.77	N.D.	0.04	--	90	0.82	N-200	N-150	N-300	N-300	25140	39360	48200
M03-06 3-16868	NUS-6	J	B&C	10.77	N.D.	0.03	--	96	0.74	300	240	500	1000	16960	23360	31700
M03-07 3-16869	NUS-7	J	B&C	11.19	0.27	--	0.78	95	0.69	1340	1710	900	1000	14000	18790	27180
M03-08 ^c 3-16870	NUS-8	J	B&C	11.92	1.09	--	0.84	92	0.72	8660	10270	4320	4310	19380	27650	38470
M03-09 3-16871	NUS-9	J	B&C	11.59	N.D.	0.07	--	89	0.71	N-200	N-150	N-300	N-300	13050	19160	26870
M03-10 3-16872	NUS-10	J	B&C	11.96	N.D.	0.07	--	85	0.72	N-200	N-300	N-1000	N-1100	19100	29270	40710
M03-11 3-16873	NUS-11	J	B&C	11.41	N.D.	0.13	--	87	0.70	N-300	N-400	N-1100	N-650	15040	22160	31830
M03-12 3-16874	NUS-12	J	B&C	17.51	N.D.	0.09	--	81	0.77	N-360	N-300	N-1000	N-1000	12780	21310	27800
M03-13 3-16875	NUS-13	J	B&C	11.40	N.D.	0.07	--	79	0.75	N-200	N-250	N-3700	N-1400	16050	27270	36300
M03-14 3-16876	NUS-14	J	B&C	100mL	N.D.	0.01	--	87	0.74	N-380	N-360	N-2000	N-1350	20320	30970	41870
M04-08D 3-16792	NUS-15	J	B&C	1.86	N.D.	0.60	--	84	0.74	N-500	N-400	N-1260	N-1600	25910	40750	55330
M03-16 3-24908	NUS-16	J	B&C	10.89	3.07	--	0.82	82	0.73	27700	33870	14880	14740	22090	35340	48470
M03-17 24907	NUS-17	J	B&C	10.89	3.27	--	0.80	97	0.70	25830	32300	11475	11625	23020	30580	43550
M03-16 ^d 24906 ^e	NUS-0	J	B&C	--	N.D.	0.12	--	96	0.67	N-200	N-300	N-640	N-640	14900	19330	28900
	NUS-16B	J	B&C	10.02	2.86	--	0.83	96	0.85	20220	24290	8615	7950	23820	42040	35580

Table 1. (cont.)

- a. "N.D." indicates Not Detected at concentration in excess of D.L. cited.
- b. Notation "N-" indicates noise level; signal does not exceed noise by a factor of 2.5
- c. Sample spiked with native TCDD (Spike level = 0.99 μ g/kg).
- d. Method Blank.
- e. Intralab duplicate.

TABLE 1 (cont.)

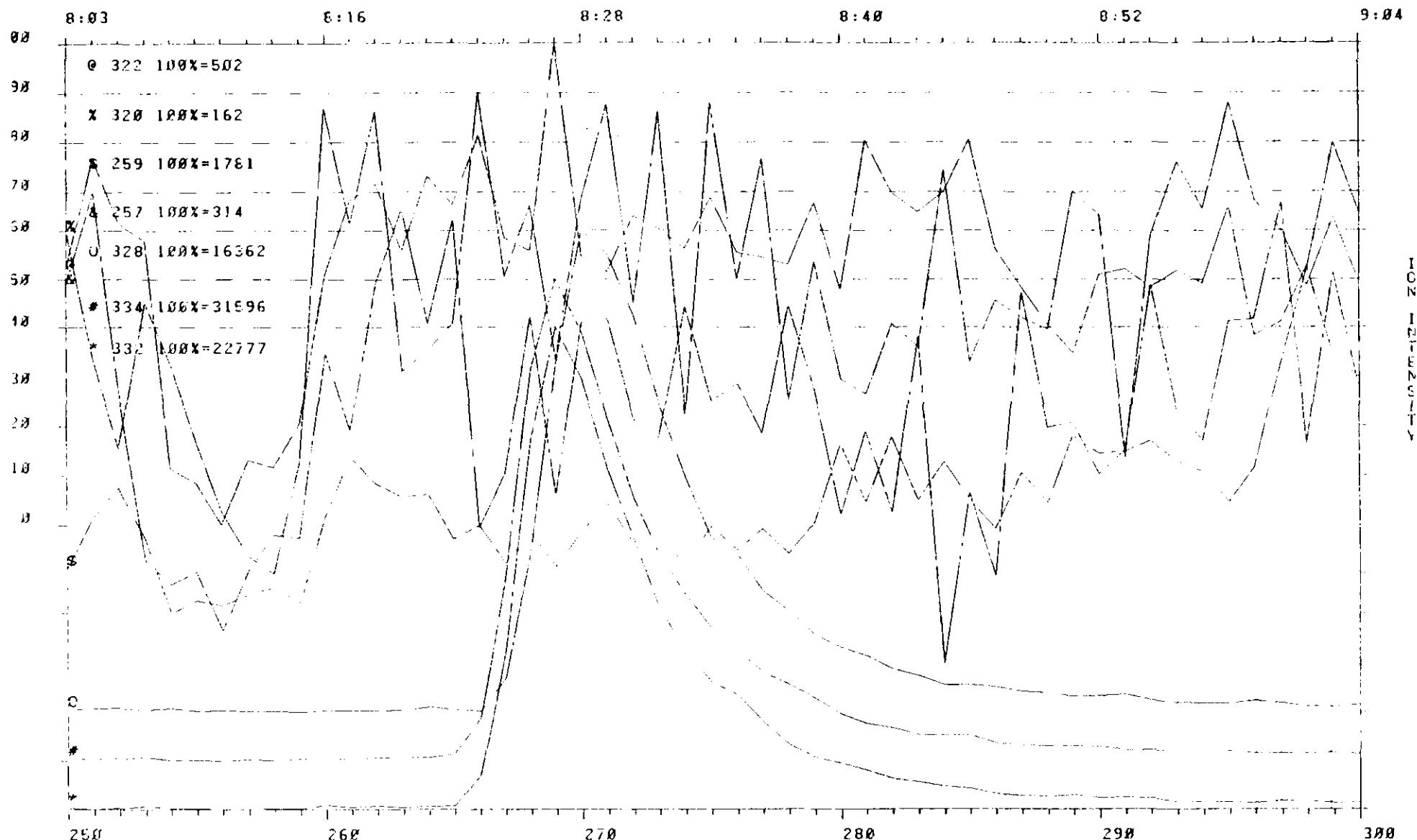
<u>ug/kg*</u> <u>Native TCDD</u>	<u>RRF (Native)</u>	<u>Date</u>	<u>RRF (Surrogate)</u>
1	0.55	7/14/83	0.81
1	0.55	7/15/83	0.79
1	0.50	7/26/83	0.80

QUALITY CONTROL SUMMARY

<u>Item</u>	<u># of Data Points</u>	<u>Mean ± S.D.</u>
Surrogate Accuracy	19	89±5.6
Native TCDD Recovery	1	110%
Surrogate Warning Limits		78-100% (0.78-1.00ppb)
Surrogate Control Limits		72-106% (0.72-1.06ppb)
EPA Surrogate Action Limits		50-150% (0.5-1.5ppb)

(Mass Chromatograms Attached)

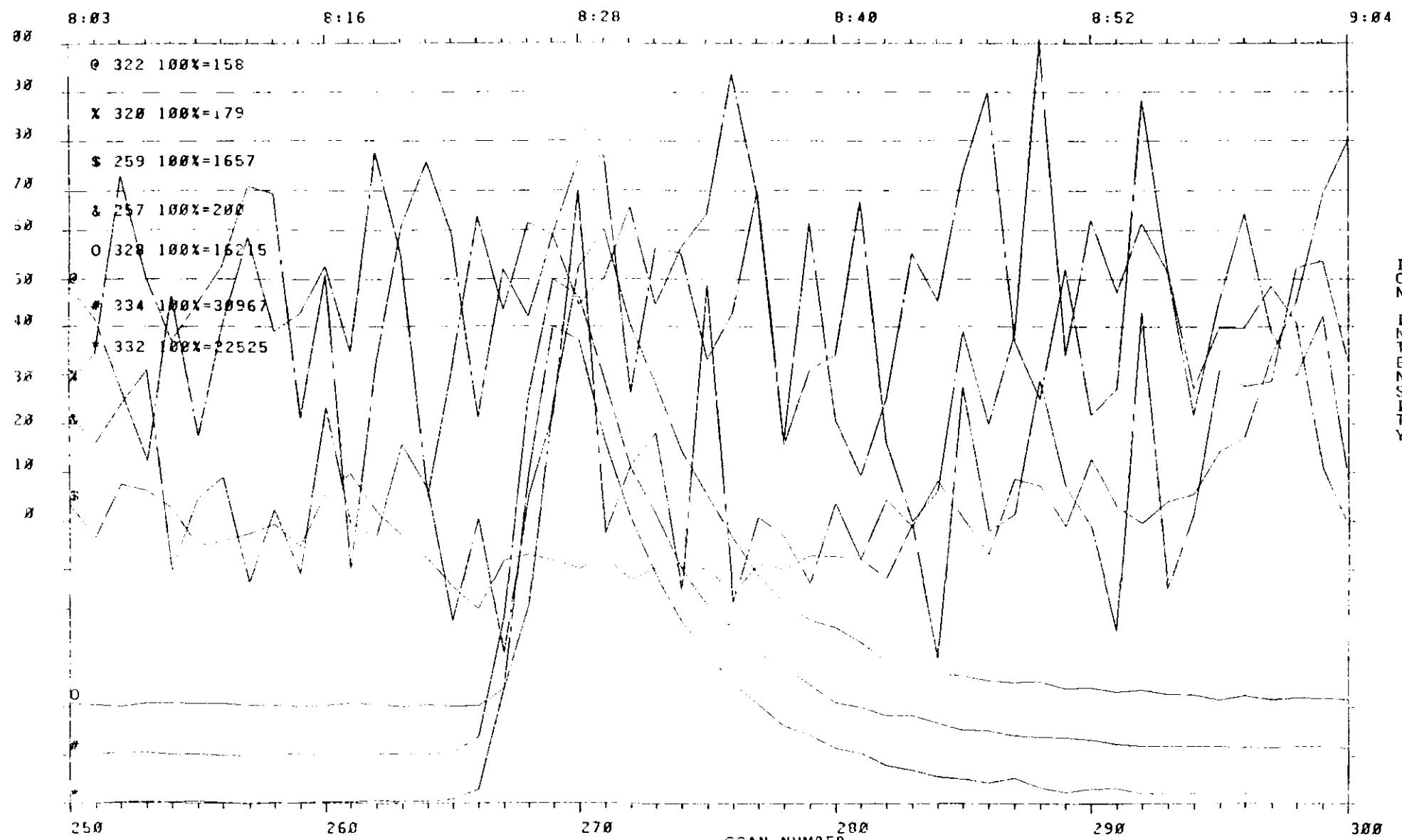
BREHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
DATE: 8/83 ME:
KRATOS MS2 DS55 SOFTWARE, RUN: NUS40006, NAME: NUS-1
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-16696
FIGURE: 1

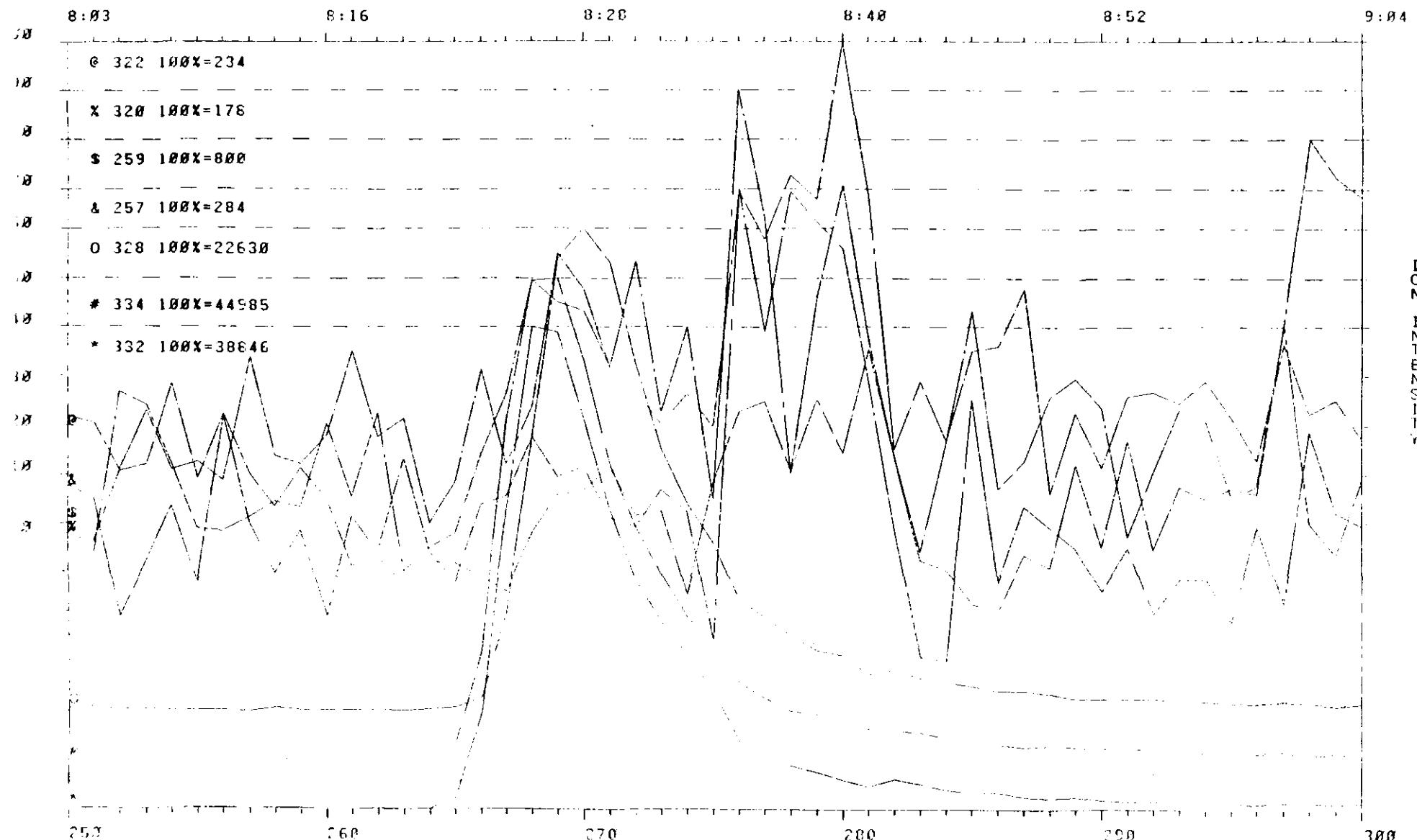
BREIN LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435

KRATOS MODEL 355 SOFTWARE, RUN: NUS40001, (NAME: NUS-2
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



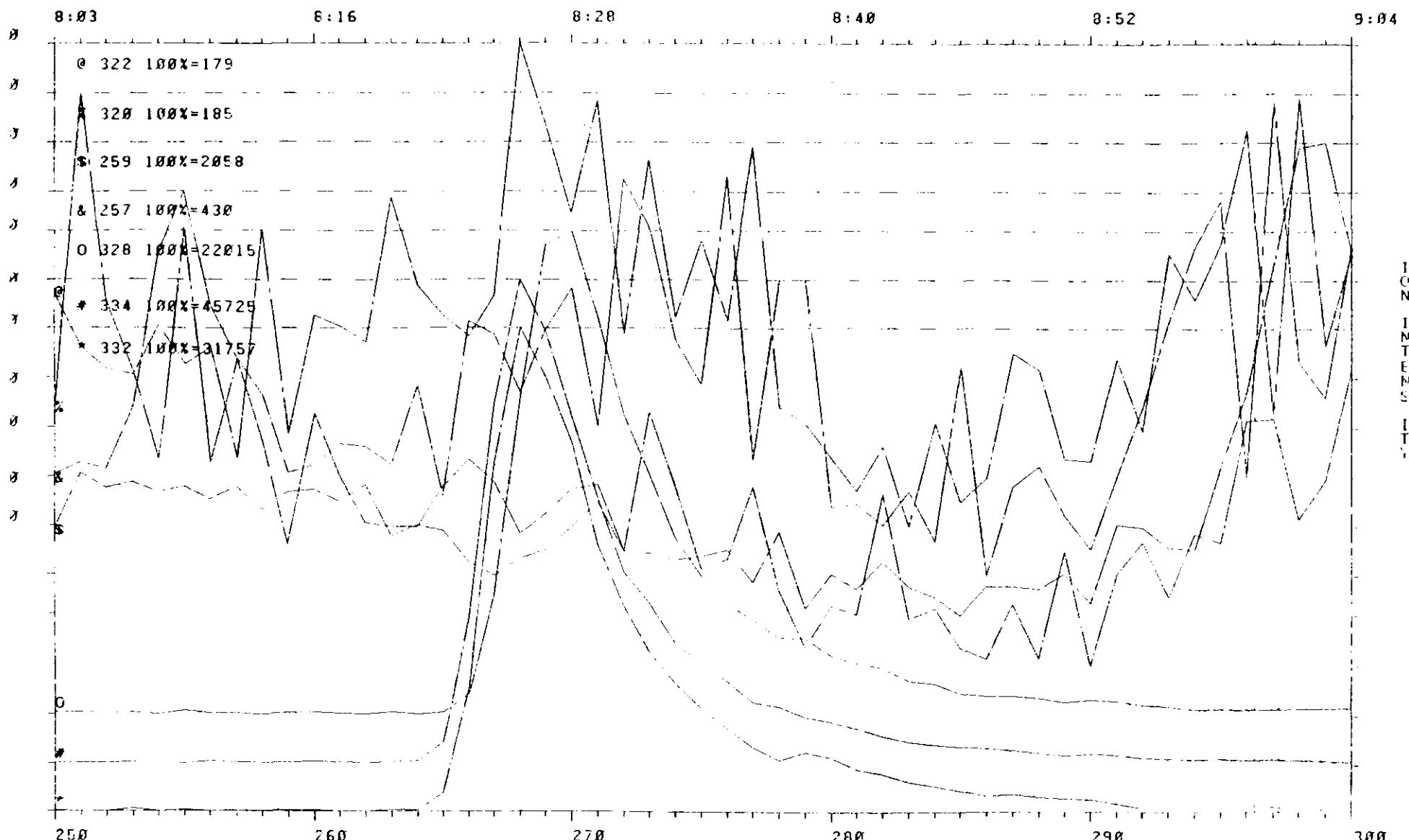
SCANNING NUMBER
HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-16697
FIGURE: 2

BREHM LABORATORY | URGHT STATE UNIVERSITY | ON. | 0 | 15 |
KRATOS M, DS55 SOFTWARE, RUN: NUS40009, SU NAME: NUS-3
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16698
FIGURE: 3

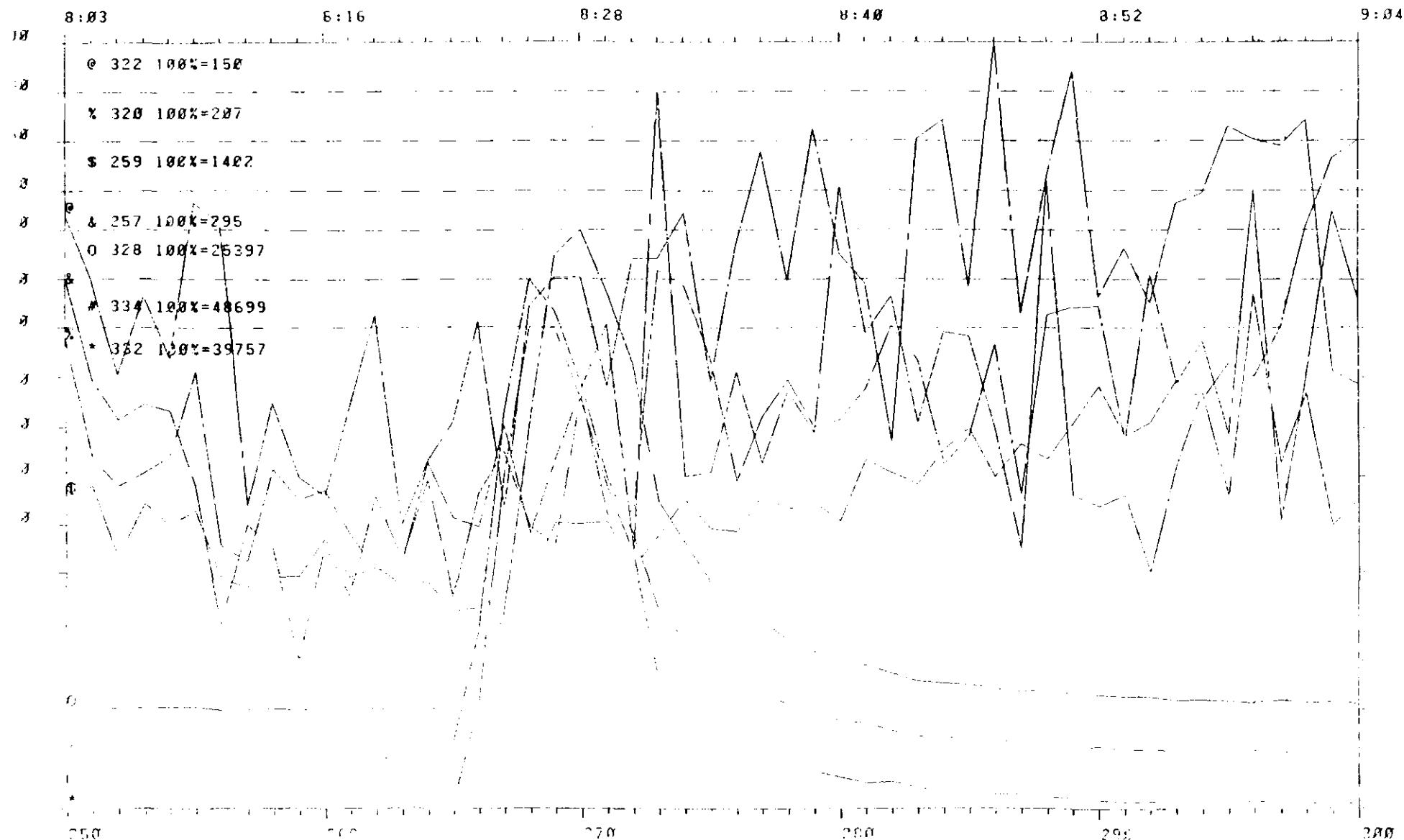
BREHM LABORATORY - URGHT STATE UNIVERSIT - 0 DN, 0 5
D 07 83 14E: 14
KRATOS MS., DS55 SOFTWARE, RUN: NUS40010, WSU NAME: NUS-4
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16699

FIGURE: 4

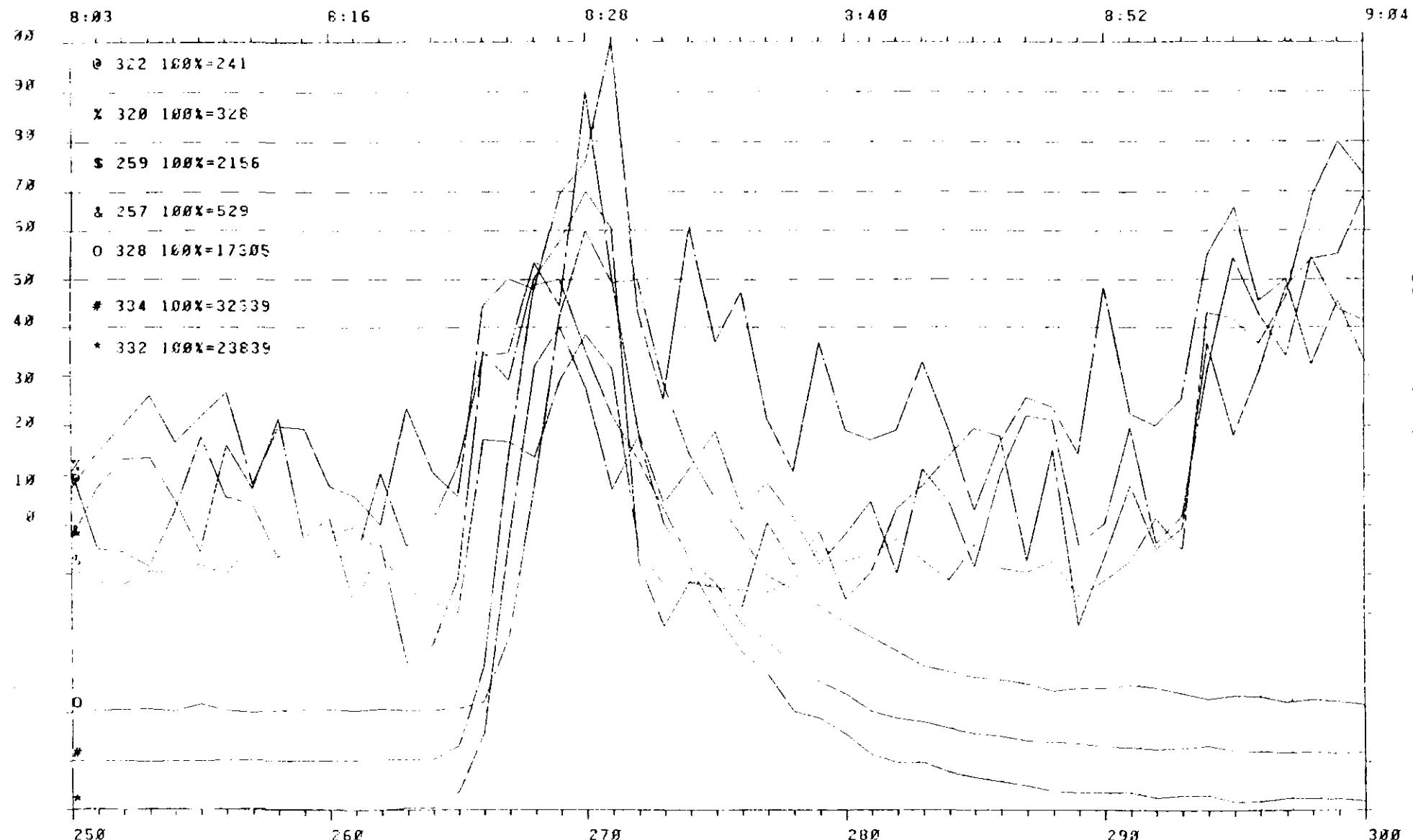
BREM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS 150, DS55 SOFTWARE, RUN: NUS4001, WSU NAME: NUS-5
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIZENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-16700

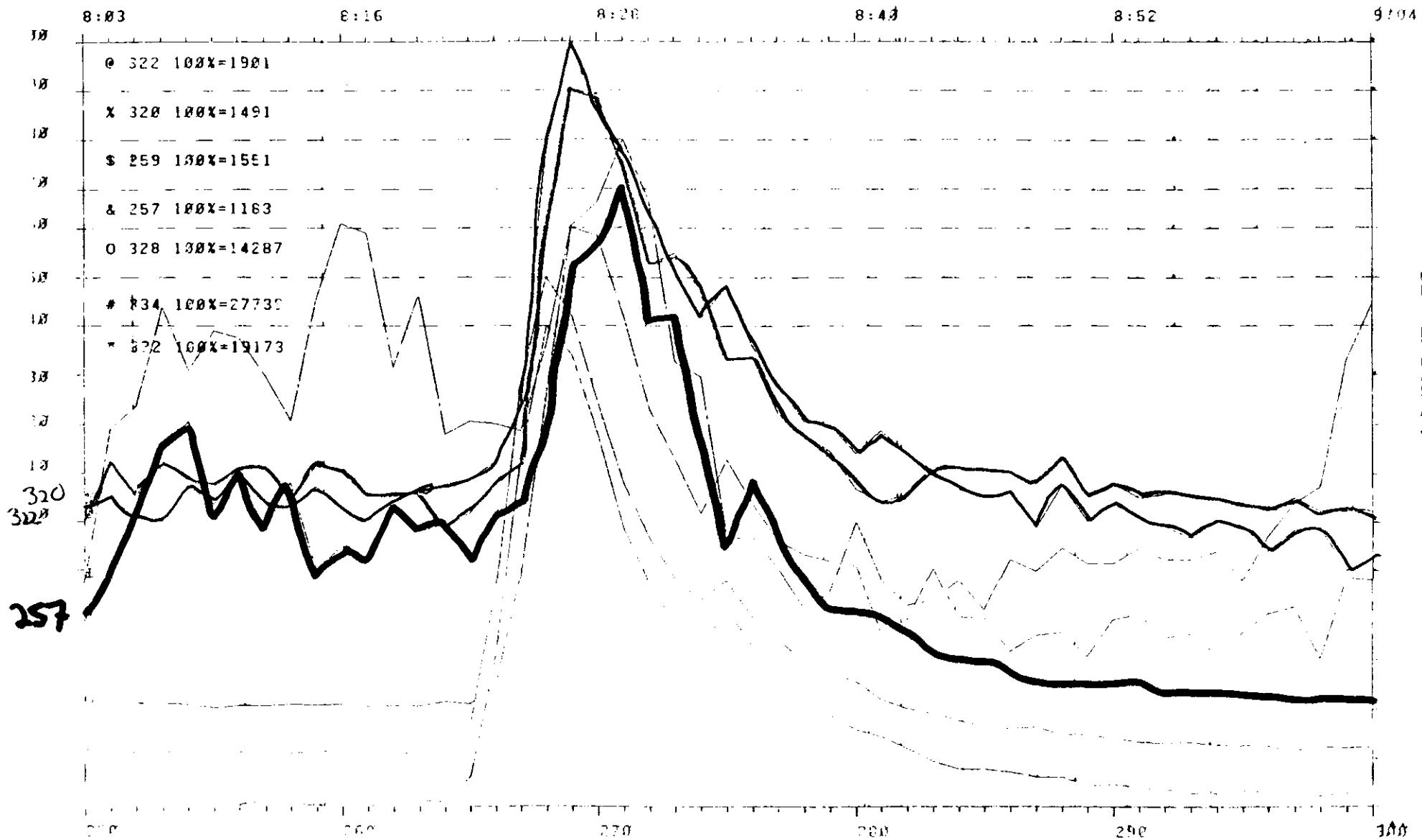
FIGURE 5

BREHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO - 45435
D 87 83 4E 25
KRATOS 5, DS55 SOFTWARE, RUN: NUS4001, WSU NAME: NUS-6
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLOROBENZO-P-DIOXINS



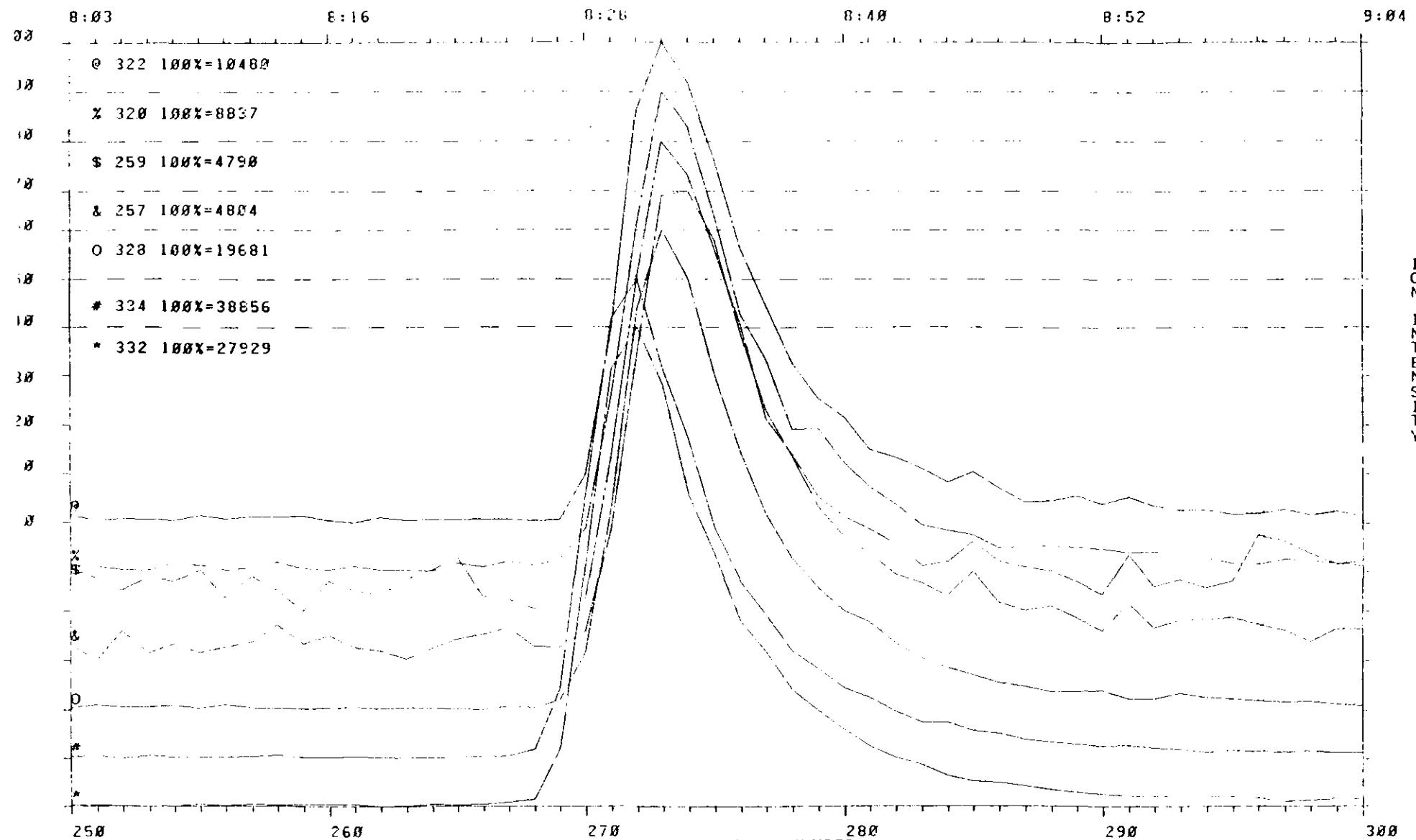
HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-16868
FIGURE: 6

BPEHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS MS, D555 SOFTWARE, RUL: NUS40013 SU NAME: NUS-2
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS

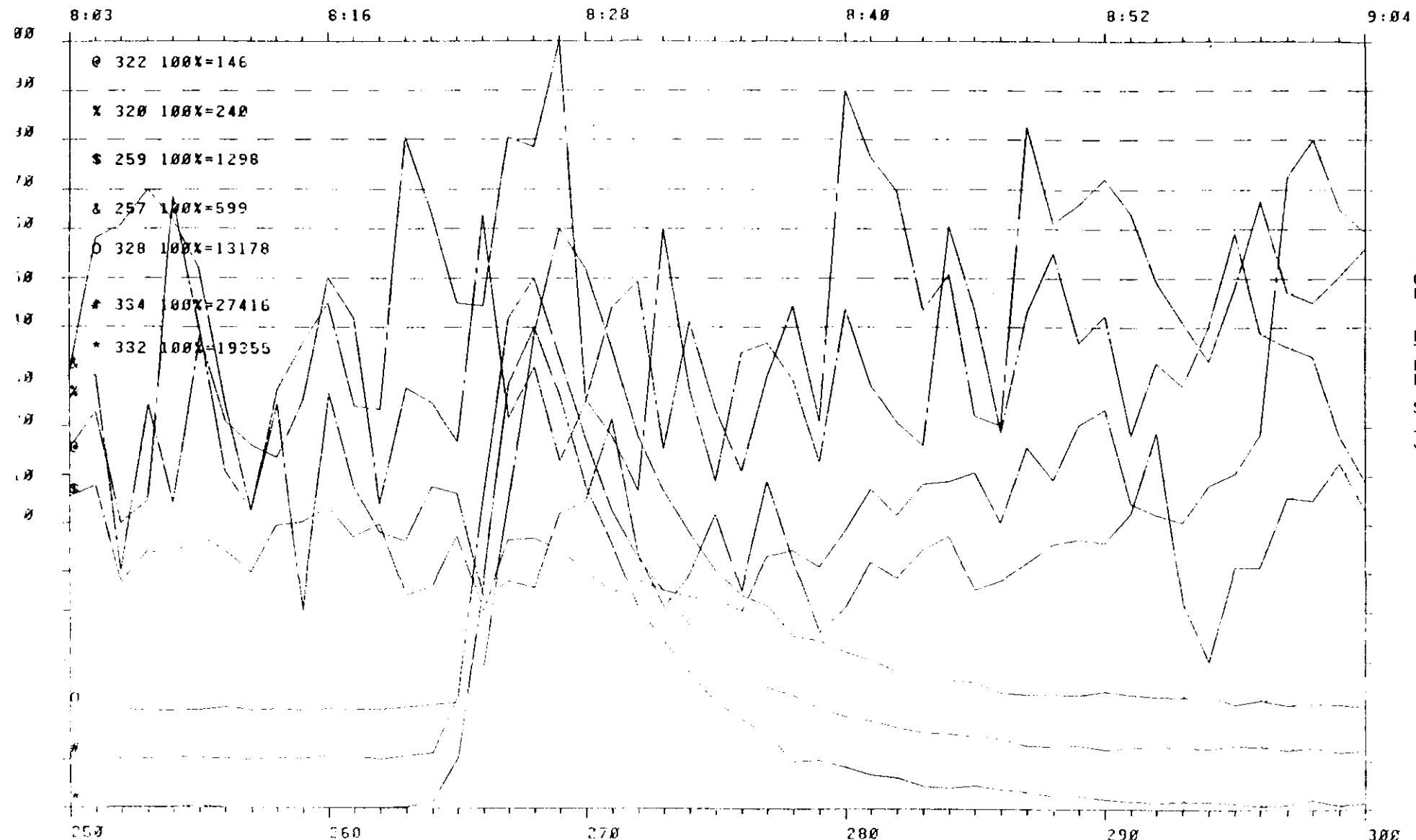


HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-14869
FIGURE: 7

EREM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS MS DS55 SOFTWARE, RUN: NUS40014, SU NAME: NUS-B
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLOROBENZO-P-DIOXINS



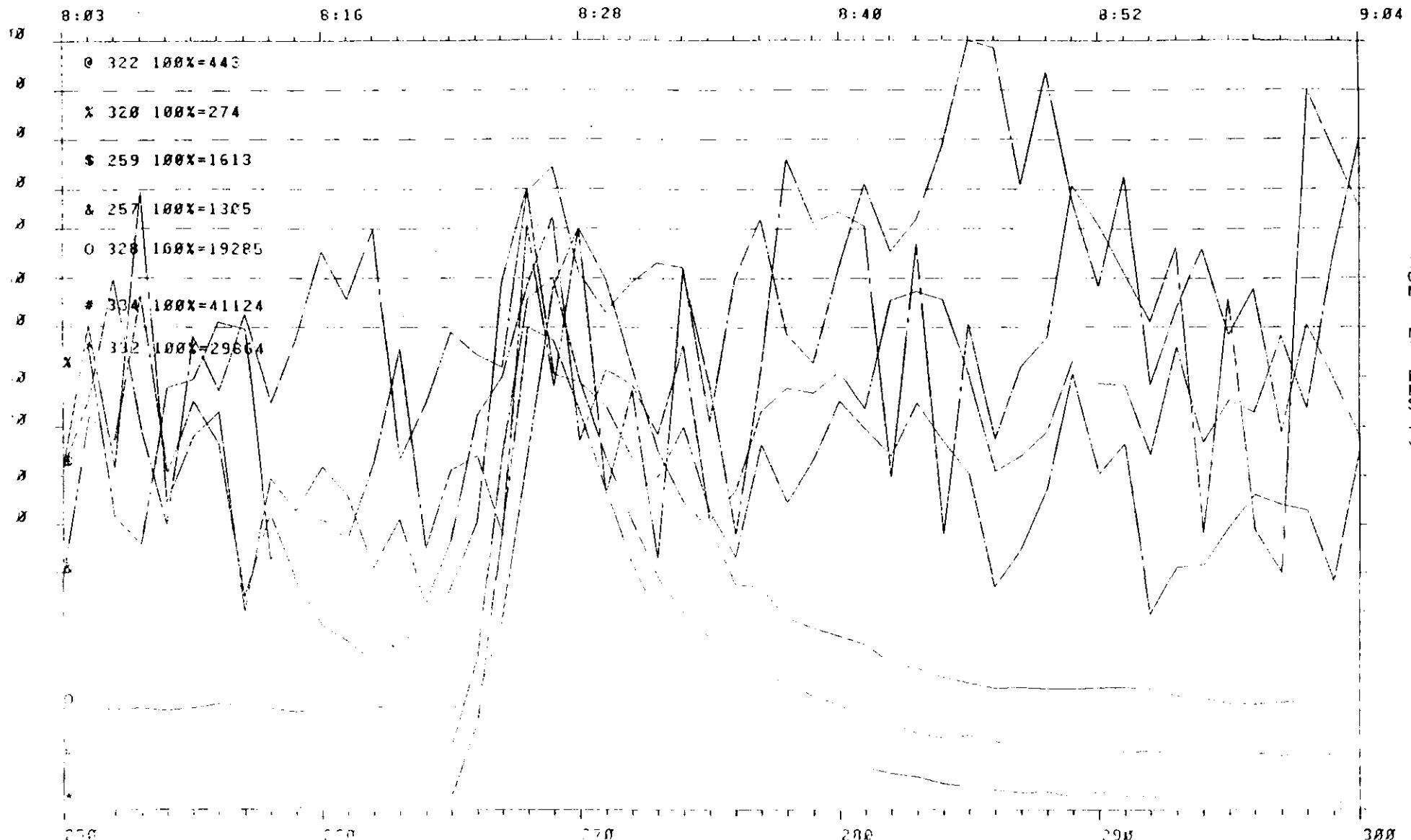
BREHM LABORATORY - WRIGHT STATE UNIVERSITY - CANTON | 10 | 35 |
DATE: 10/18/83 ME: 53
KRATOS N., DS55 SOFTWARE, RUN: NUS40015, WSU NAME: NUS-9
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16871

FIGURE: 9

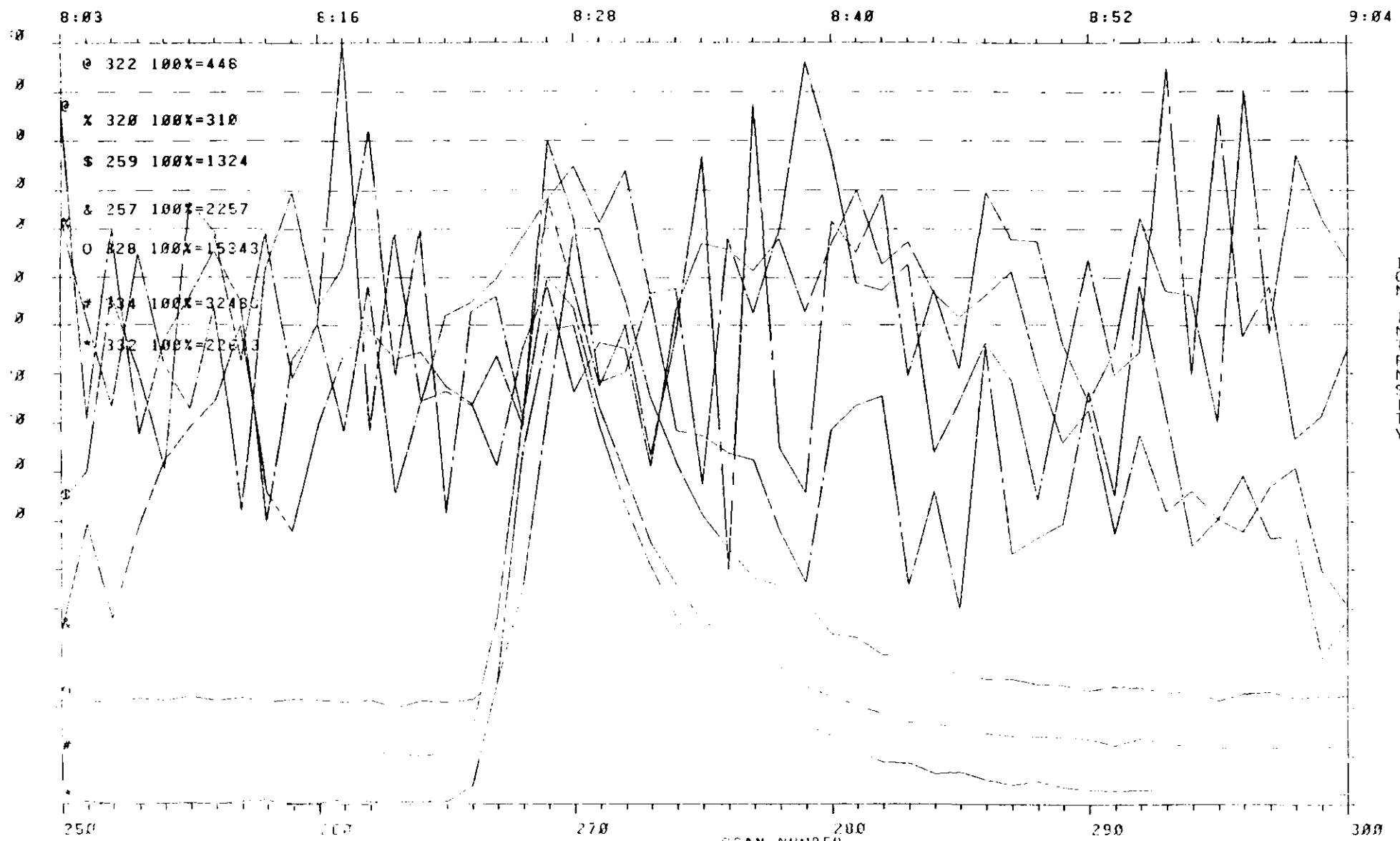
BREHM LABORATORY - MONTGOMERY STATE UNIVERSITY - BIRMINGHAM, ALABAMA
KRATOS MS., DS55 SOFTWARE, RUN: NUS40016, SU NAME: NUS-10
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16872

FIGURE: 10

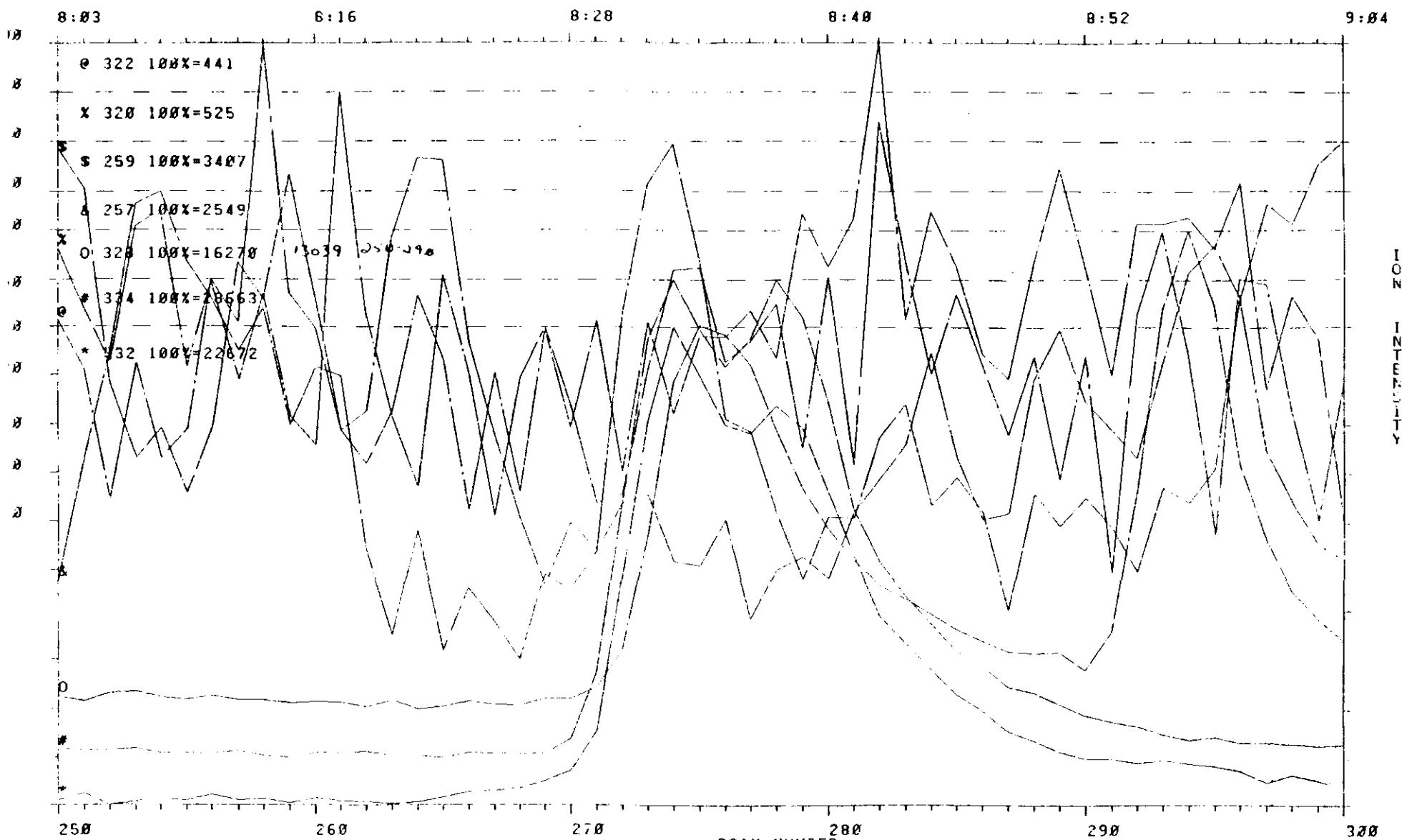
BREHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS M, DSSE5 SOFTWARE, RUN: NUS40017 SU NAME: NUS-11
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16873
FIGURE: 11

113

BREHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS MS2B S55 SOFTWARE, RUN: NUS40018, W NAME: NUS-12
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS

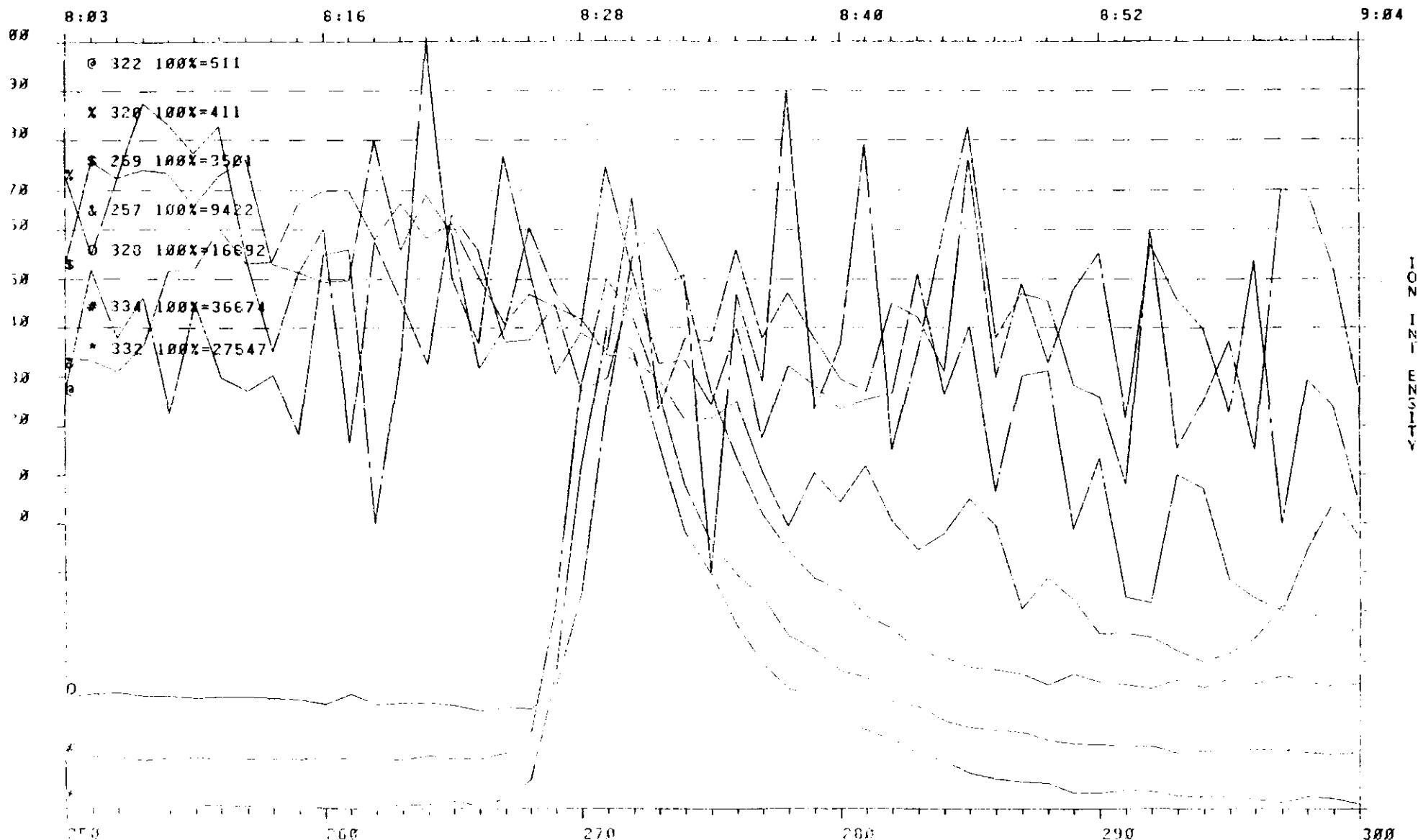


HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-16874
FIGURE: 12

RRFHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON OHIO 45435

[10/11/83] 10E:

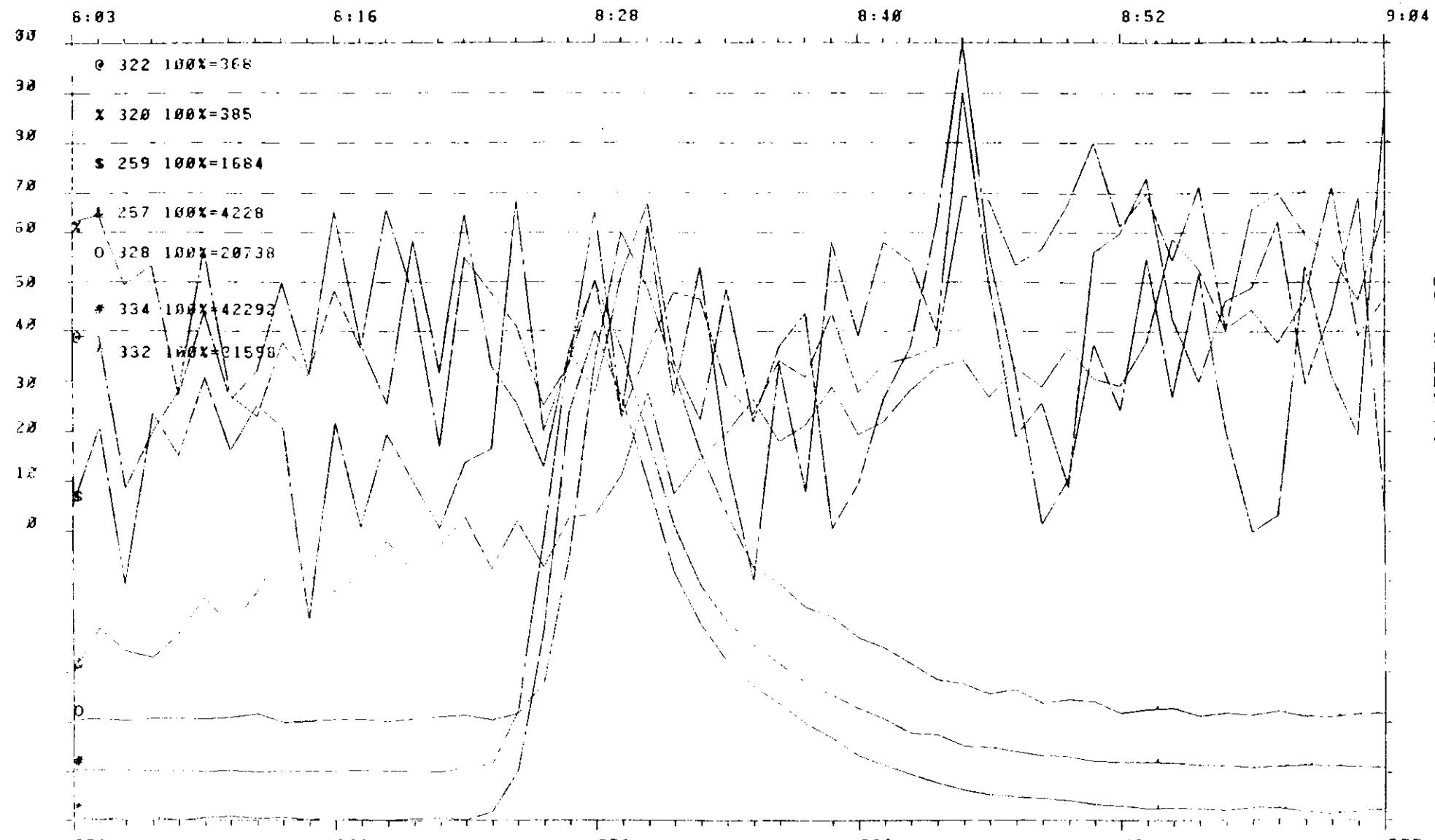
KRATOS MS28 S55 SOFTWARE, RUN: NUS40019, NAME: NUS-13
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16875

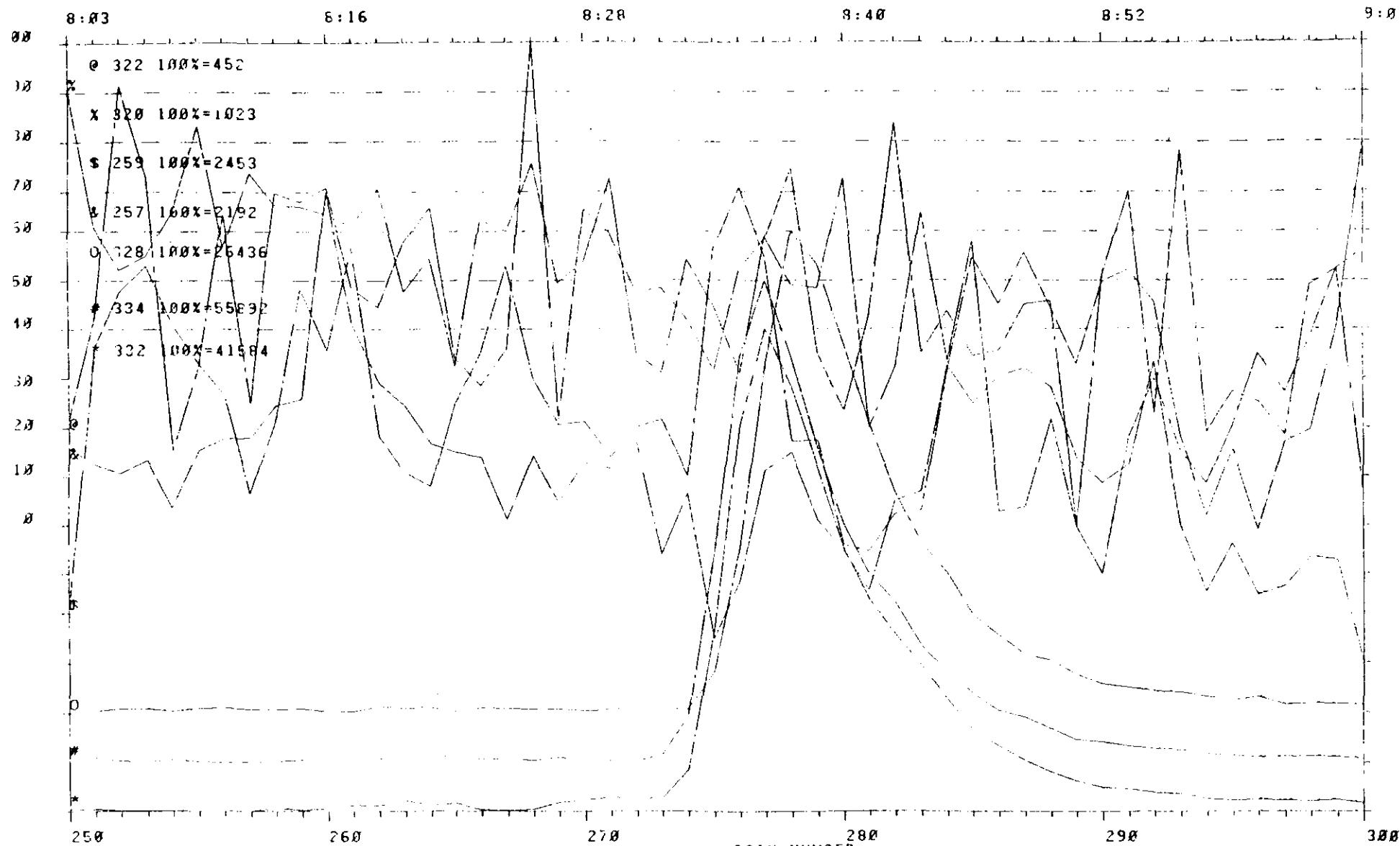
FIGURE: 13

BREHM LABORATORY - WILKES STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS N, DS55 SOFTWARE, RUN: NUS4002A, SU NAME: NUS-14
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16876
FIGURE: 14

REFIN LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON OHIO 45435
10/23/83
KRATIS25, DS55 SOFTWARE, RUN: NUS41, WSU NAME: NUS-15
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLOROBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-16792
FIGURE: 15

BREHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON OHIO 45435

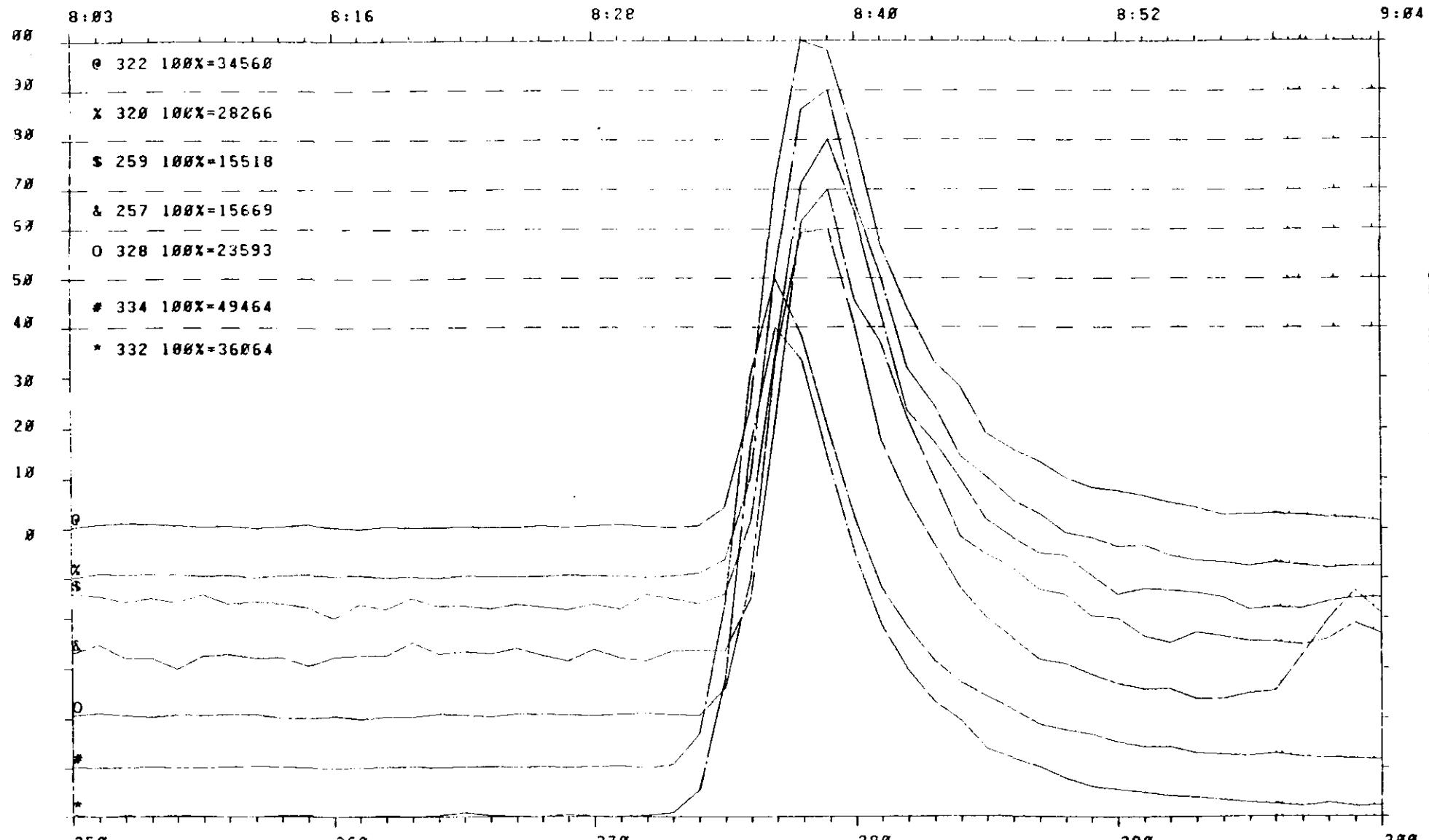
D

07

83

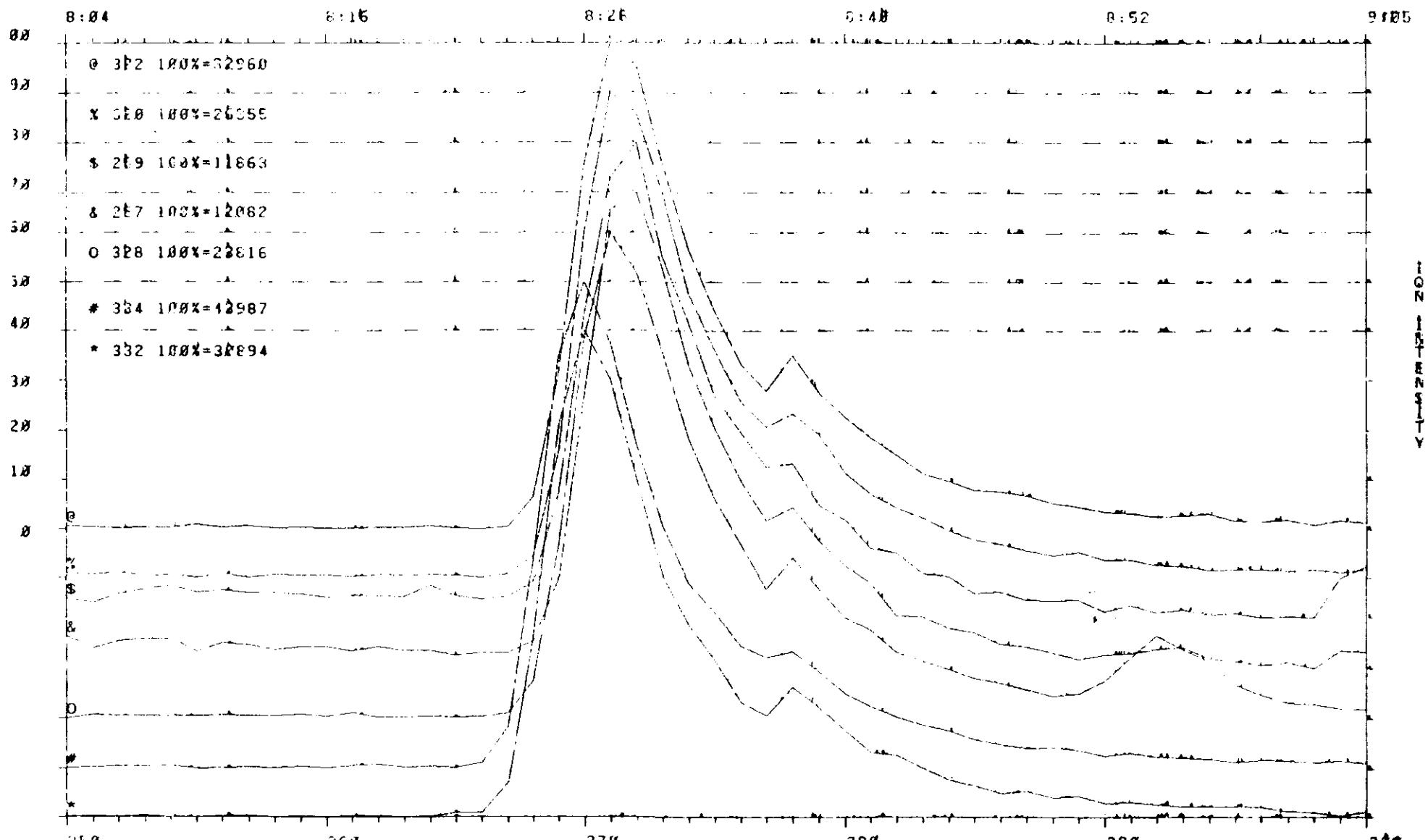
E:

KRATOS MS25 S55 SOFTWARE, RUN: NUS40022, W NAME: NUS-16
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.3-2490B
FIGURE: 16

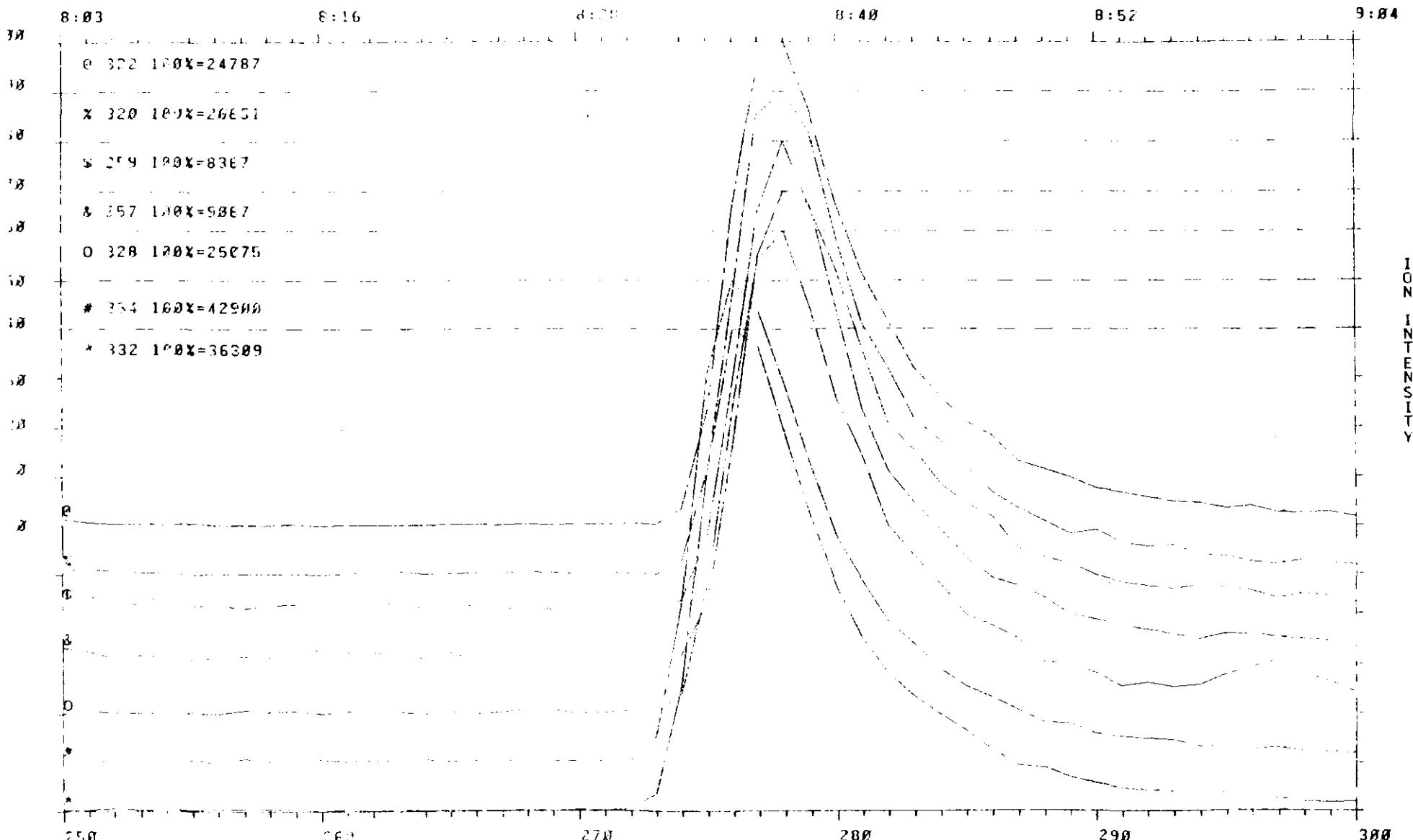
PROGRAM 4: CHROMATOGRAPH - WEIGHTS UNITS: SIGHT DAY: 04/04/83 454
KRAYOS MS25, 355 SOFTWARE, RUN: NUSA40035, WS, NAME: NUS-17
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-24907

FIGURE: 17

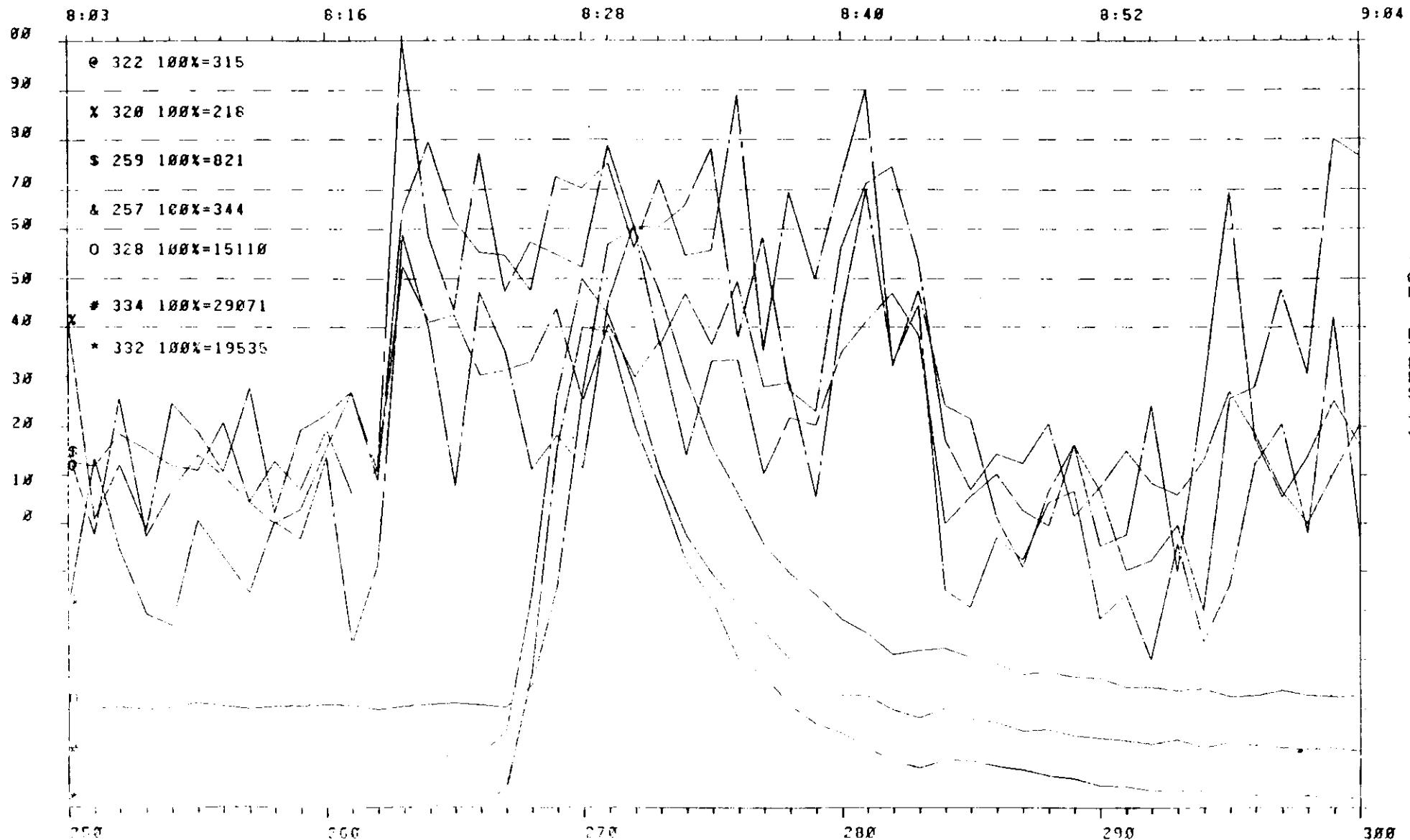
PREFM LABORATORY - WRIGHT STATE UNIVERSITY DAY 1 OH 454
DATE: 8/18/83 ME:
KRATOS MS25, SES SOFTWARE, RUN: NJG40003, WL NAME: NUS16B
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO. 3-24988

FIGURE: 18

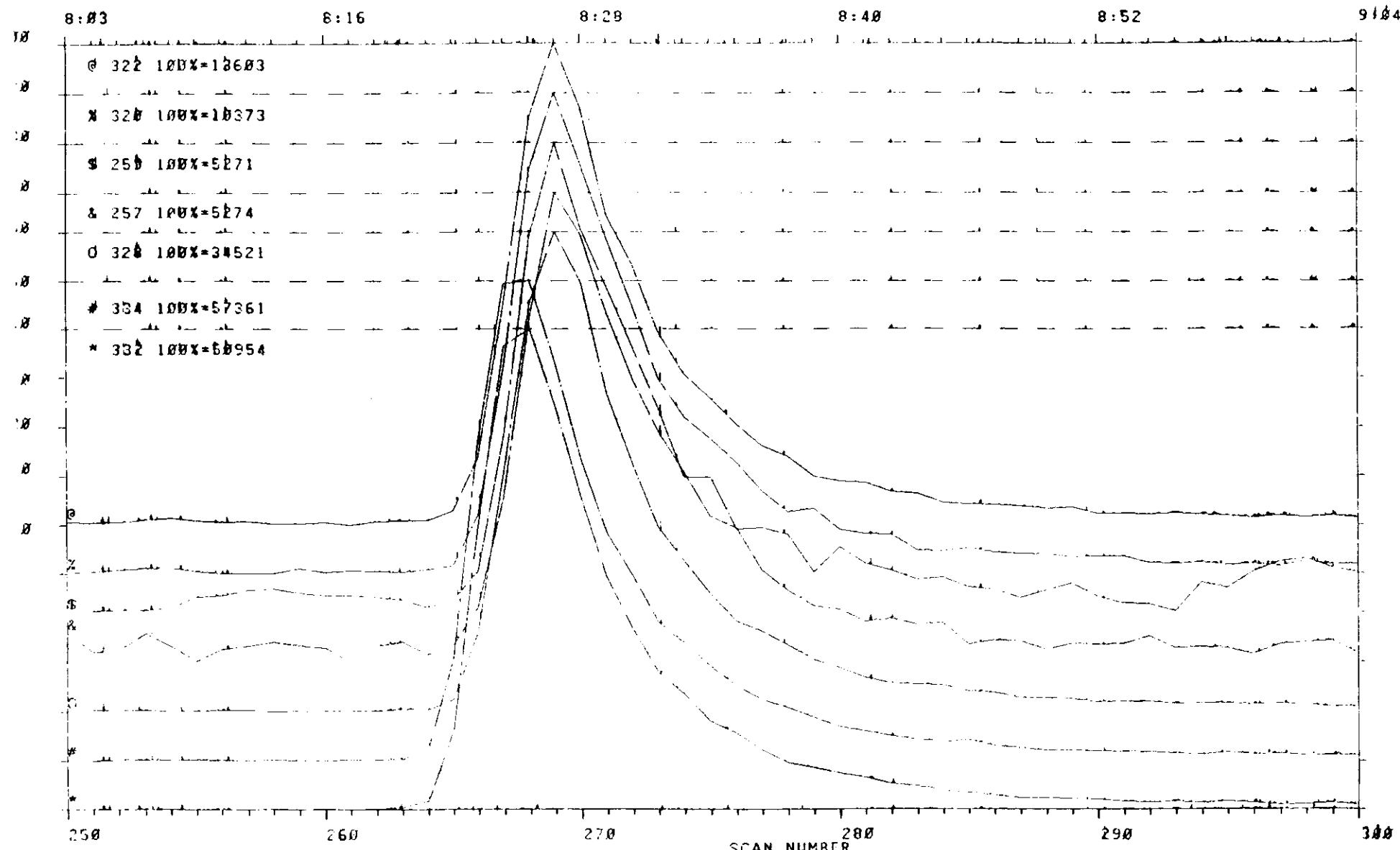
BREHM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
DATE 11/03 TIME 13:35
KRATOS II, US55 SOFTWARE, RUN: NUS4000, SU NAME: NUS-B
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.BLANC
FIGURE: 19

11/03/93
13:35

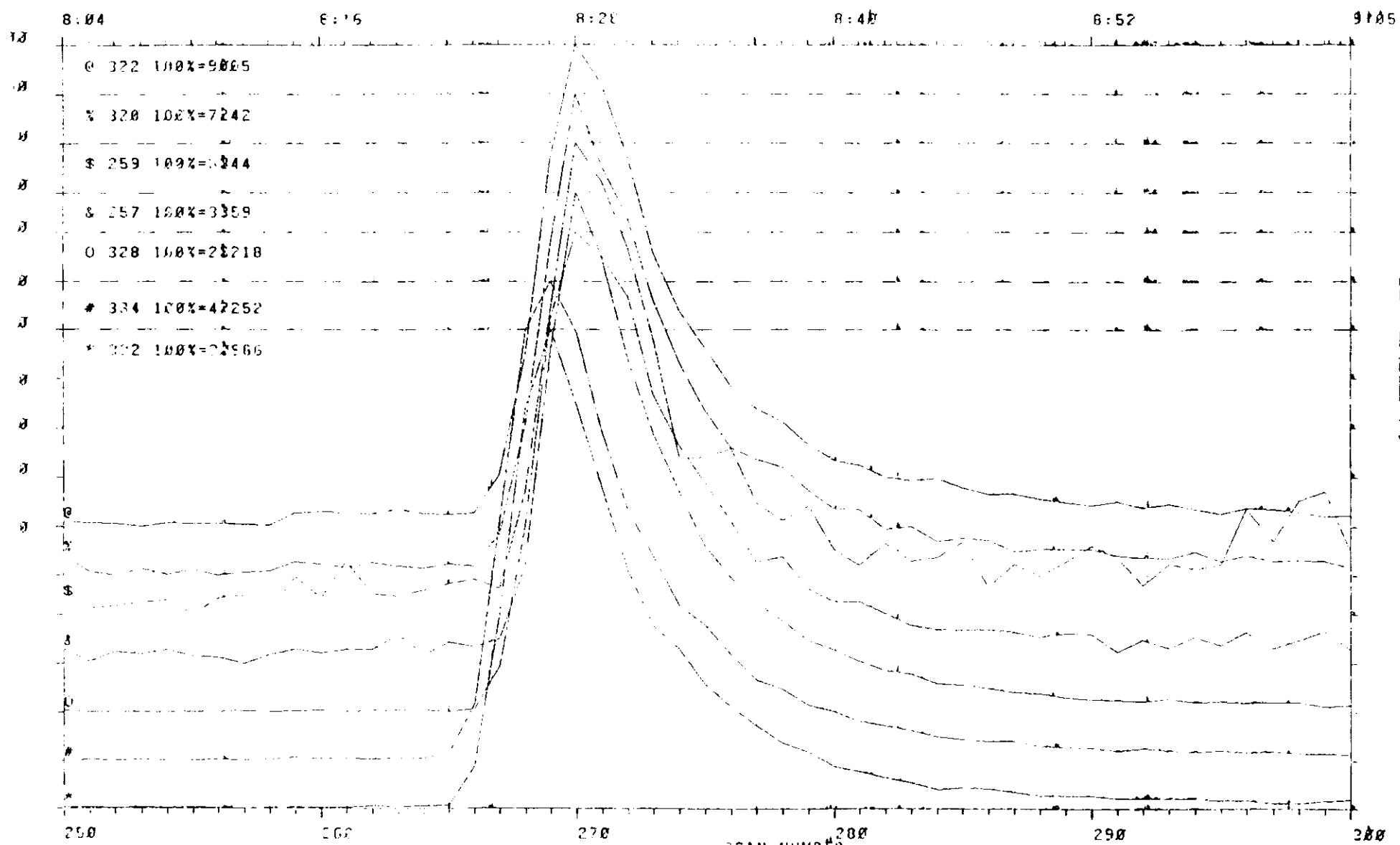
BR LAB DORY VRIG STA1 NIV TY YTO H1D .435
DATE: 8/11/83 ME 13
KRATOS 25, DS55 SOFTWARE, RUN: SWP4026, WSU NAME1 LSTD
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRM\$ ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.LOW STD (0.6ng 2,3,7,8-TCDD,
FIGURE: 20 0.6ng 37C14-2,3,7,8-TCDD,
1.5ng 13C12-2,3,7,8-TCDD)

GRIFFIN LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435

KRATOS K, DS55 SOFTWARE, RUN: NUS4022, SU NAME: L-STD
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS

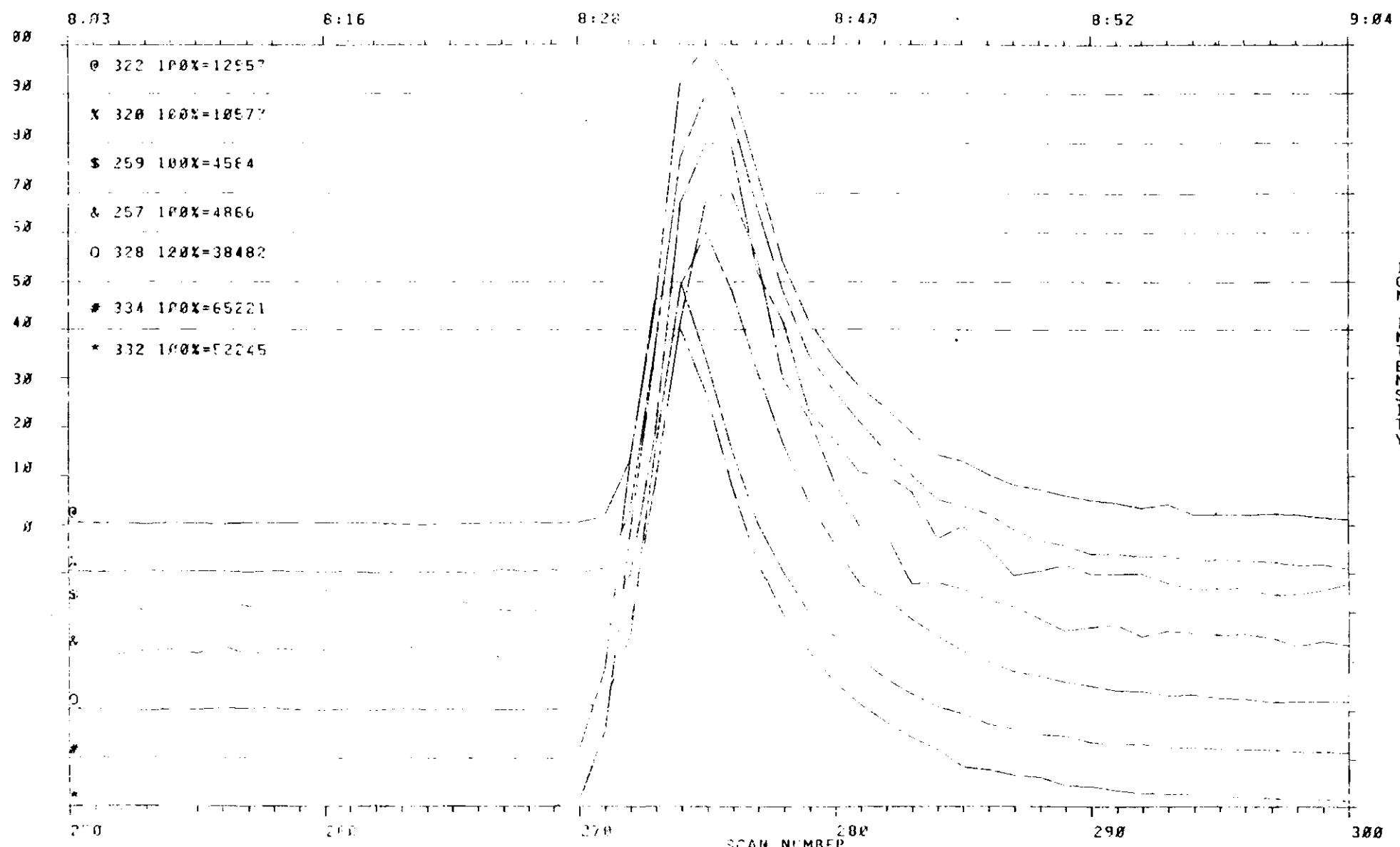


HRC-ICRMS ANALYSIS OBTAINED FOR CALIBRATION SAMPLE NO. STANDARD LOW (0.6ng 2,3,7,8-TCDD,
0.6ng 3⁷C14-2,3,7,8-TC
1.5ng 13C12-2,3,7,8-TC

FIGURE 21

BREHM LABORATORY - WRIGHT STATE UNIVERSITY DAYTON, OHIO 45428

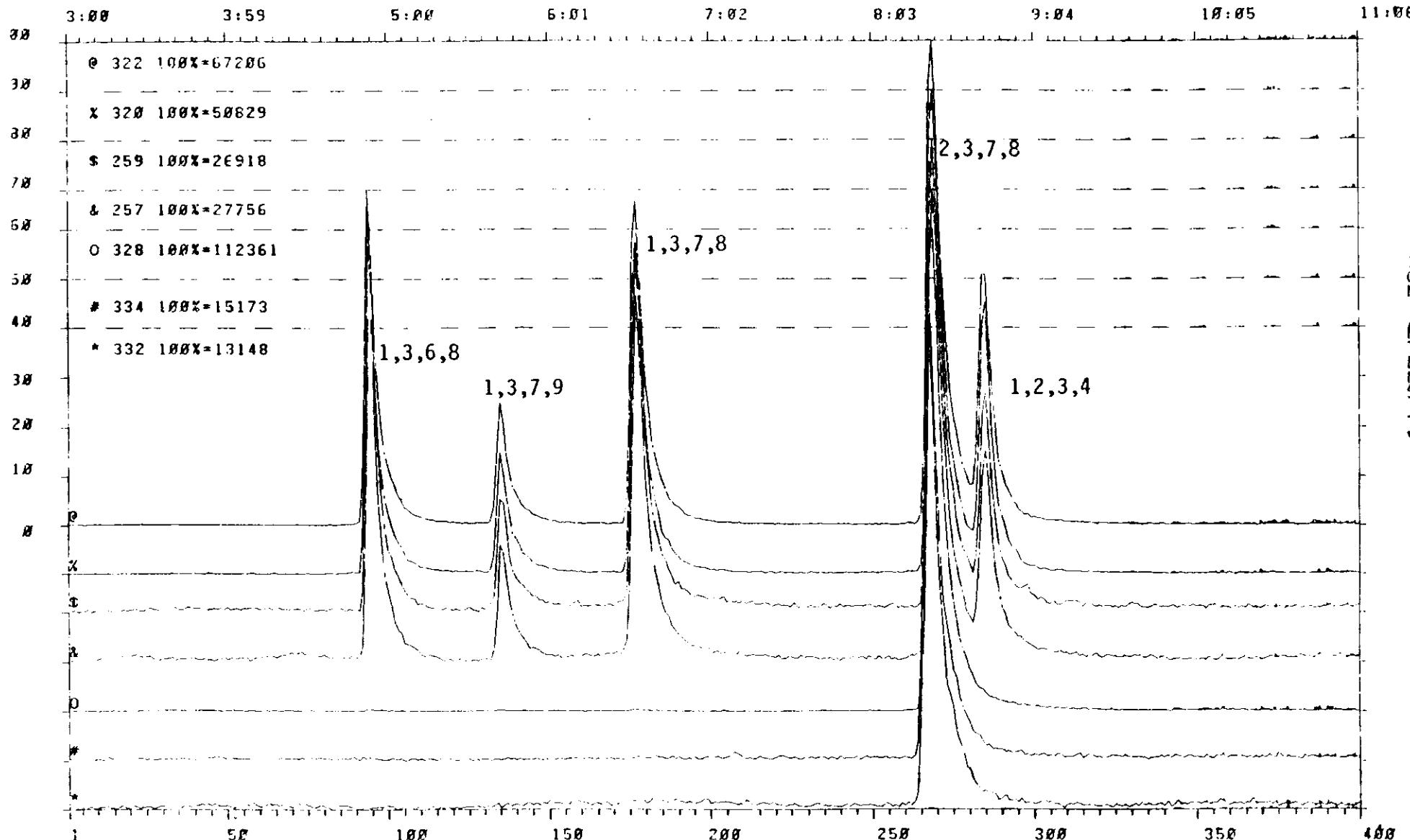
KRATOS MS25 355 SOFTWARE, RUN: NJ540002, NAME: L-STD
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLOROBENZO-P-DIOXINS



HRGC-IRMS ANALYSIS OBTAINED FOR CALIBRATION SAMPLE NO. LOW STANDARD (0.6ng 2,3,7,8-TCDD,
FIGURE: 22 0.6ng 3⁷C14-2,3,7,8-TCDD,
1.5ng 13C12-2,3,7,8-TCDD)

ORIGINAL
(Red)

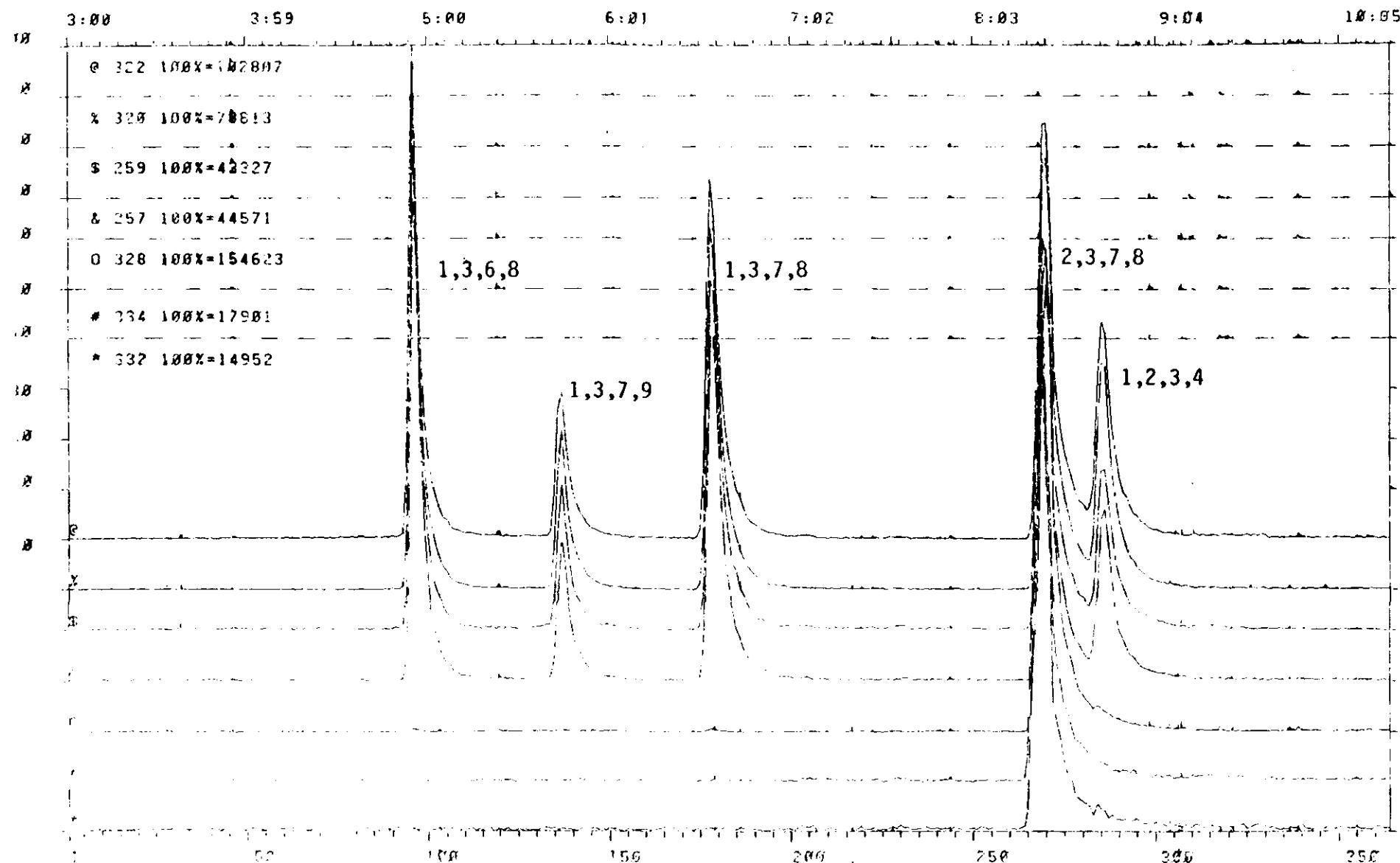
BREHM LABORATORY | WRIGHT STATE UNIVERSITY | TON | 10 | 35 |
DATE: 7/83 ME: 55
KRATOS (c) DS55 SOFTWARE, RUN: SWP4026A /SU NAME: 51STD
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR EPA/REGION 3 SAMPLE NO.5 ISO MIX
FIGURE: 23

ORIGINAL
(Scanned)

SRM LABORATORY - WRIGHT STATE UNIVERSITY - DAYTON, OHIO 45435
KRATOS / 5, US65 SOFTWARE, RUN: NUS4002 WSU NAME: SID
SELECTED ION MASS CHROMATOGRAMS FOR TETRACHLOROBENZO-P-DIOXINS



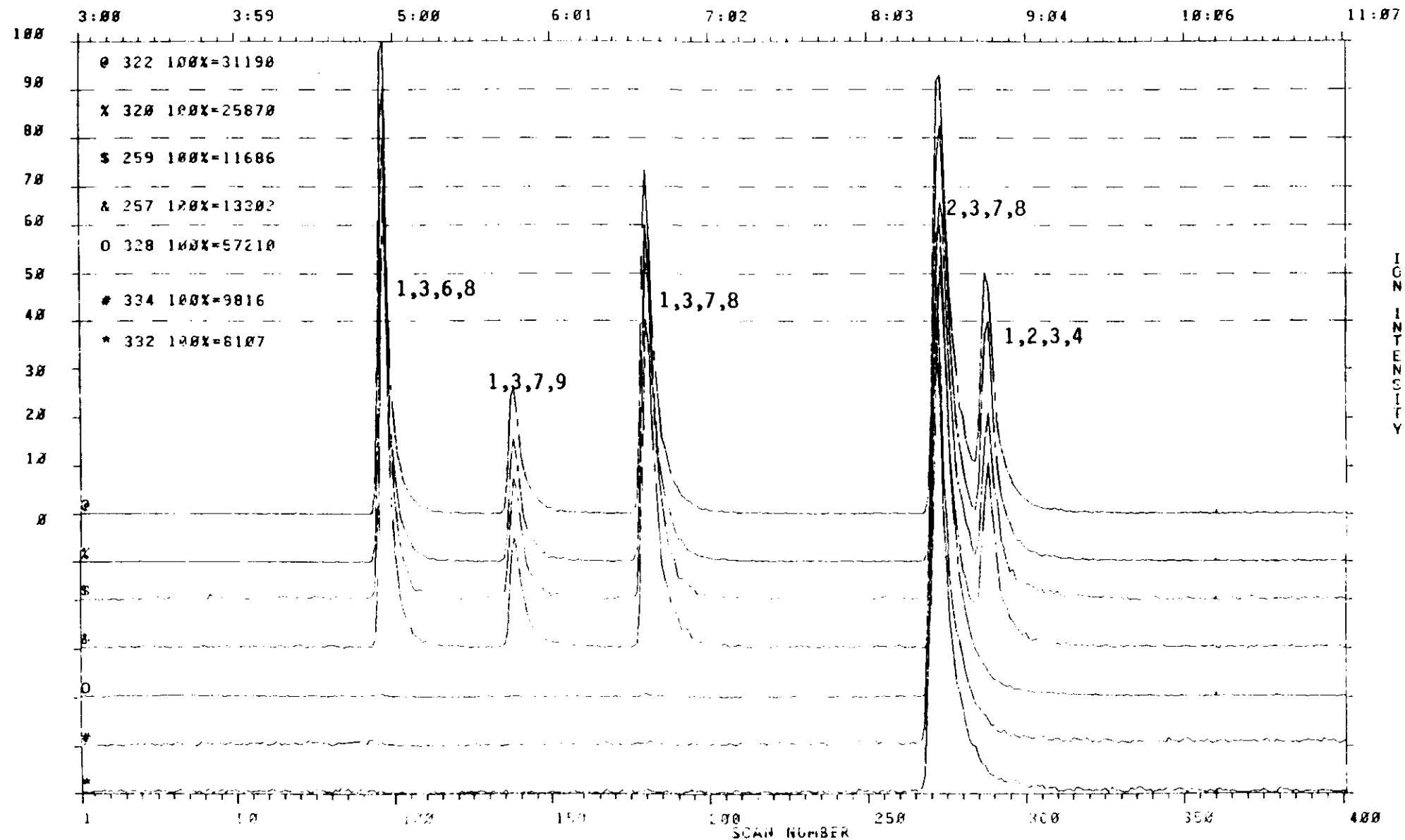
HPLC-LRMS ANALYSIS OBTAINED FOR CALIBRATION SAMPLE NO. STANDARD
FIGURE: 24

ORIGINAL
(Red)

Bⁿ L^a C^b P^c WR^d STA^e UNIV^f ATY^g UHI^h 543

DATE: 07/26/83 TIME: 10:43

KRATOS MS25, DSS5 SOFTWARE, RUN: NJS40001, WSU NAME: 51S051
SELECTED-ION MASS CHROMATOGRAMS FOR TETRACHLORODIBENZO-P-DIOXINS



HRGC-LRMS ANALYSIS OBTAINED FOR CALIBRATION SAMPLE NO.5 ISO TCDD

FIGURE: 25

ORIGIN

SAMPLE TRACKING FORM

Project: VIAC New Jersey Soils - Region III

SIS No. 629C

Lab Prep Notebook No. 12
 Pages 20, 22, 25, 27, 28, 30
 Lab Analysis Notebook No. EPA-11
 Pages 19, 20

WSU Sample #	Customer I.D.	Sample Type	Sample Weight	INTERNAL STANDARD SPIKE LEVELS			Date Prepared	Date Analy:
				$^{15}\text{C}-\text{R00}$	$^{34}\text{Cl}-\text{R00}$	NaF R00		
NUS-0	-	Blank	-	25mg	10mg		7/13/83	7/14/83
NUS-1	M03-01 (3-16696)	Soil	11.48g	25mg	10mg		7/13/83	7/14/83
NUS-2	M03-02 (3-16697)	Soil	11.57g	25mg	10mg		7/13/83	7/14/83
NUS-3	M03-03 (3-16698)	Soil	10.51g	25mg	10mg		7/13/83	7/14/83
NUS-4	M03-04 (3-16699)	Soil	10.63g	25mg	10mg		7/13/83	7/14/83
NUS-5	M03-05 (3-16700)	Soil	11.77g	25mg	10mg		7/13/83	7/14/83
NUS-6	M03-06 (3-16868)	Soil	10.77g	25mg	10mg		7/13/83	7/14/83
NUS-7	M03-07 (3-16869)	Blank Soil	11.19g	25mg	10mg		7/13/83	7/14/83
NUS-8	M03-08 (3-16870)	Soaked Soil	11.92g	25mg	10mg	11.81mg	7/13/83	7/14/83
NUS-9	M03-09 (3-16871)	Soil	11.59g	25mg	10mg		7/13/83	7/14/83
NUS-10	M03-10 (3-16872)	Select	11.96g	25mg	10mg		7/13/83	7/14/83

Sample Prep Accomplished By:

Christopher, Etan Yann Babin

Analysis Accomplished By:

J. Ferguson, J. Bennett

SAMPLE TRACKING FORM

Project: VIAR - New Jersey Soils - Region III

SDS M. 629C

Lab Prep Notebook No. 12
 Pages 20, 22, 25, 27, 28, 30
 Lab Analysis Notebook No. EPA-II
 Pages 20

<u>Sample #</u>	<u>Customer I.D.</u>	<u>Sample Type</u>	<u>Sample Weight</u>	<u>INTERNAL STANDARD SPIKE LEVELS</u> $C_7 = 7000$ $C_{14} = 2000$	<u>Date Prepared</u>	<u>Date Analyze</u>
115-11	1403-11 (3-16873)	Schist	11.41g	25ng 10ng	7/13/83	7/17/83
115-12	1403-12 (3-16874)	Sediment	17.51g	25ng 10ng	7/13/83	7/19/83
115-13	1403-13 (3-16875)	Sediment	11.40g	25ng 10ng	7/13/83	7/17/83
115-14	1403-14 (3-16876)	111-tick methone	100ml	25ng 10ng	7/13/83	7/14/83
115-15	1404-080 (3-16792)	SL1	1.86g	25ng 10ng	7/13/83	7/14/83
115-16	1403-16 (3-24908)	SLV	10.89g	25ng 10ng	7/13/83	7/14/83
115-17	1403-17 (3-24907)	SLV	10.89g	25ng 10ng	7/13/83	7/15/83

Sample Prep Accomplished By:

Christopher, Stan Yoo Bulan

Analysis Accomplished By:

J. Ferguson,

SAMPLE TRACKING FORM

Project: VTRK- New Jersey Soils

SIS No. (29)

Lab Prep Notebook No. EPA-12
Pages 91-97
Lab Analysis Notebook No. EPA-11
Pages 24

<u>Sample #</u>	<u>Customer I.D.</u>	<u>Sample Type</u>	<u>Sample Weight</u>	<u>INTERNAL STANDARD SPIKE LEVELS</u>	<u>Date Prepared</u>	<u>Date Analyze</u>
-----------------	----------------------	--------------------	----------------------	---------------------------------------	----------------------	---------------------

NIC-168	1103-16(3-24908)	Soil	10.02g	25g	10g	7/22/83
---------	------------------	------	--------	-----	-----	---------

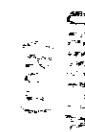
Dye/cale Sample

Sample Prep Accomplished By:

Stan Van Zeller, C. Everson

Analysis Accomplished By:

J Ferguson



SAI... LO... IN SH... 1

1, d2

DATE: 7/1/83

SAMPLE CUSTODIAN SIGNATURE: Janet Noller

DOCUMENT CONTROL # _____

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal

 present absent
 intact not intact not security safe

2. Chain-of-Custody

 present absent

3. Sample Tags

 present absent

Sample Tag Numbers

 listed not listed on chain-of-custody

CASE NUMBER SCS 10 629C

AIRBILL NUMBER 768844302

Shipping Container: Taped Shut

DATE RECEIVED	TIME RECEIVED	CHAIN-OF-CUSTODY RECORD NUMBER	SMO SAMPLE NUMBERS	CORRESPONDING		DOES INFORMATION ON CUSTODY RECORDS, SMO FORMS, AND SAMPLE TAGS AGREE?	REMARKS: CONDITION OF SAMPLE SHIPMENT ETC.
				SAMPLE TAG NUMBERS	ASSIGNED LAB NUMBERS		
7/1/83	8:40	3-10881	None	3-16696	NUS-1	Yes	good
				3-16697	NUS-2	Yes	good
				3-16698	NUS-3	Yes	good
				3-16699	NUS-4	Yes	good
				3-16700	NUS-5	Yes	good
				3-16868	NUS-6	Yes	good
				3-16869	NUS-7	No	good
				3-16870	NUS-8	Yes	good
				3-16871	NUS-9	Yes	good
				3-16872	NUS-10	No	good
				3-16873	NUS-11	Yes	good
				3-16874	NUS-12	No	good
				3-16875	NUS-13	Yes	good
7/1/83	8:40	3-10881	None	3-16876	NUS-14	Yes	good
7/1/83	8:40	3-11576	None	3-16792	NUS-15	No	good

SAM Log SH

DATE: 7/1/83

SAMPLE CUSTODIAN SIGNATURE: *Walker VM*

DOCUMENT CONTROL #

CIRCLE THE APPROPRIATE RESPONSE

- | | |
|--------------------------------------|--|
| 1. Custody Seal | present/absent
intact/not intact <i>not security seal</i> |
| 2. Chain-of-Custody | present/absent |
| 3. Sample Tags
Sample Tag Numbers | present/absent
listed/not listed on chain-of-custody |

CASE NUMBER 385 No. 629C

AIRBILL NUMBER 76884435

Shipping Container Type Sheet

TO: Linda Haas, SMO
FROM: Russell J. Sloboda *RS*
SUBJECT: Deliverable Requirements for TCDD Analyses
Re: SAS 618C, 619C, 629C, 630C, 631C

DATE: June 20, 1983

COPIES:

In addition to the deliverables specified in the June 1983 revision of the Region VII dioxin protocol, the following additional deliverables are requested as part of all dioxin results:

- o Whenever dioxin is detected in a sample, provide the following documentation to verify that the result is not an artifact of instrument carryover (chromatographic ghosting):
 1. The identification number of the injection run on the instrument immediately preceding this sample.
 2. Indicate whether the preceding run is a sample, spike, blank, or standard run.
 3. The date and time of injection of the preceding run.
 4. The raw peak areas for the preceding run for masses 320, 322, 257, 328, 332, and 334.
 5. If not otherwise included in the deliverables, include the mass chromatograms from the preceding run.
- o Include mass chromatograms of all blank analyses.
- o Provide documentation which indicates which, if any, samples were reanalyzed and for what reason.

klm

U.S. ENVIRONMENTAL PROTECTION AGENCY
CLP Sample Management Office
P.O. Box 818 - Alexandria, Virginia 22313
Phone: 703/557-2490 - FTS/557-2490

SAS Number

6290

SPECIAL ANALYTICAL SERVICE
PACKING LIST

6/22/83
(RDL)

Sampling Office: <u>FIT Region III NUS</u>	Sampling Date(s): <u>6/22/83 (6/30)</u>	Ship To: <u>Wright State University Brehm Laboratory 3640 Colonel Glenn Rd. Dayton, OHIO 45435</u>	For Lab Use Only
Sampling Contact: <u>T. Fromm</u> (name)	Date Shipped: <u>6/30/83</u>	Site Name/Code: <u>M-03</u>	Date Samples Rec'd <u>7/1/83</u>
<u>(215) 687-9510</u> (phone)		Attn: Dr. Tiernan	Received By: <u>James P. H.</u>

Sample Numbers	Sample Description i.e., Analysis, Matrix, Concentration	Sample Condition on Receipt at Lab
1. <u>M-03-01</u>	<u>2378TCDD, solid</u>	<u>good</u>
2. <u>M-03-02</u>	<u>" " solid</u>	<u>good</u>
3. <u>M-03-03</u>	<u>" " "</u>	<u>good</u>
4. <u>M-03-04</u>	<u>" " "</u>	<u>good</u>
5. <u>M-03-05</u>	<u>" " "</u>	<u>good</u>
6. <u>M-03-06</u>	<u>" " "</u>	<u>good</u>
7. <u>M-03-07</u>	<u>" " "</u>	<u>good</u>
8. <u>M-03-08</u>	<u>" " " to be spiked by lab"</u>	<u>good</u>
9. <u>M-03-09</u>	<u>" " "</u>	<u>good</u>
10. <u>M-03-10</u>	<u>" " "</u>	<u>good</u>
11. <u>M-03-11</u>	<u>" " "</u>	<u>good</u>
12. <u>M-03-12</u>	<u>" " "</u>	<u>good</u>
13. <u>M-03-13</u>	<u>" " "</u>	<u>good</u>
14. <u>M-03-14</u>	<u>" " liquid-decon. rinsate (1,1,1-TCFa)/H₂O</u>	<u>good</u>
15. <u>M-03-15 17^(LR)</u>	<u>" " solid</u>	<u>good</u>
16. <u>M-03-16</u>	<u>" " solid</u>	<u>good</u>
17. <u>M-04-050</u>	<u>" " solid</u>	<u>good</u>
18.		
19.		
20.		

For Lab Use Only

White - SMO Copy, Yellow - Region Copy, Pink - Lab Copy for return to SMO, Gold - Lab Copy

EXPRE

FROM (Your Name)

1059-6338-6

COMPANY

DEPARTMENT/FLOOR NO.

NUS Corporation

STREET ADDRESS

992 Old Eagle School Road Suite 916

CITY

Wayne

STATE

Pennsylvania

AIRBILL NO.

768844300

ZIP ACCURATE ZIP CODE REQUIRED
FOR CORRECT MAILING

1 9 0 8 7

YOUR NOTES/REFERENCE NUMBERS (FIRST 12 CHARACTERS WILL ALSO APPEAR ON INVOICE)

PAYMENT By Shipper Bill Recipient's F.E.C. Acct. Bill 3rd Party F.E.C. Acct. Bill Credit Card Cash in Advance

Account Number/Credit Card Number

SERVICES CHECKED

CHECK ONLY ONE BOX

PRIORITY
 GOVERNMENT PACKAGES
(UP TO 70 LBS)
COURIER

OVERNIGHT LETTERS

DELIVERY AND SPECIAL HANDLING
CHECK SERVICES REQUIRED

PACKAGES WEIGHT DECLARED VALUE O/S EMP. NO. DATE

1 FEDERAL EXPRESS OPERATION C-1000
IN-SERVICE GUIDE: RECIPIENT'S
PHONE NUMBER IS REQUIRED

1

40

1

40

 CASH RECEIVED

AGT/PRO

 RETURN SHIPMENT

AGT/PRO

 THIRD PARTY OBL. TO SEL. OBL. TO HOLD

ADVANCE ORIGIN

ADVANCE DESTINATION

2 DELIVER3 SATURDAY SERVICE REQUESTED
(See Reverse-Sales charge applies for delivery)4 RESTRICTED ARTICLES SERVICE (P-1 and
Standard Air Packages only - extra charge)5 S&B (Signature Security Service
requires extra charge included)6 DRY ICE _____ LBS7 OTHER SPECIAL SERVICE _____8 _____9 _____

TOTAL

TOTAL

TOTAL

RECEIVED AT

SHIPPER'S DOOR

 REGULAR STOP ON-CALL STOP F.E.C. LOC.

STREET ADDRESS

CITY

STATE

ZIP

OTHER

TOTAL CHARGES

PART

#2041730764

REVISION DATE

10/82 \$

PRINTED U.S.A.

AIRBILL NUMBER
768844300SHIPPER'S CERTIFICATION FOR RESTRICTED ARTICLES
(TYPE OR PRINT)

NO. OF PKGS.	PROPER SHIPPING NAME (PER 49 CFR, 172.101)	CLASSIFICATION	IDENTIFICATION NO.	NET QUANTITY PER PACKAGE
	FLAMMABLE SOLID N.C.S. UN 1325 FLAMMABLE SOLID			175.00

ADDITIONAL DESCRIPTION REQUIREMENTS FOR RADIOACTIVE MATERIALS (SEE BACK)	RADIOMATERIAL	FORM	ACTIVITY	CATEGORY OF LABELS	TRANS. INDEX	PACKAGE IDENTIFICATION

THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR

PASSENGER AIRCRAFT

CARGO AIRCRAFT ONLY

(DELETE-NONAPPLICABLE)

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN, OR INCIDENT TO, RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT.

I HEREBY CERTIFY THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME AND ARE CLASSIFIED, PACKED, MARKED, AND LABELED, AND IN PROPER CONDITION FOR CARRIAGE BY AIR ACCORDING TO APPLICABLE NATIONAL GOVERNMENTAL REGULATIONS.

NAME AND TITLE OF PERSON SIGNING CERTIFICATION

EMERGENCY TELEPHONE NO.

SIGNATURE OF SHIPPER

James A. Dickey

215) 653-7781

J. A. Dickey

ENVIRONMENTAL PROTECTION AGENCY

Office of Enforcement

FED-ON

Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME				NO. OF CONTAINERS	REMARKS	
F3-8306-17	M-03						Pt. Jar
STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION		
M03-01	6/22/83	11:46		X	Auger 1	1 1 Tag # 3-16696	
M03-02	6/22/83	12:00		X	Auger 2	1 1 Tag # 3-16697	
M03-03	6/22/83	12:17		X	Auger 3	1 1 Tag # 3-16698	
M03-04	6/22/83	12:35		X	Auger 4	1 1 Tag # 3-16699	
M03-05	6/22/83	10:48		X	Auger 5	1 1 Tag # 3-16700	
M03-06	6/22/83	11:20		X	Auger 6	1 1 Tag # 3-16868	
M03-07	6/22/83	11:30		X	Blank soil	1 1 Tag # 3-16869	
M03-08	6/22/83	11:30		X	Blank soil "to be spiked by lab"	1 1 Sample provided for spiking by lab. Tag # 3-16870	
M03-09	6/22/83	13:15		X	Auger 7	1 1 Tag # 3-16871	
M03-10	6/22/83	13:40		X	sediment upstream	1 1 Tag # 3-16872	
M03-11	6/22/83	14:00		X	sediment mid stream	1 1 Tag # 3-16873	
M03-12	6/22/83	14:30		X	sed. up. confl.	1 1 Tag # 3-16874	
M03-13	6/22/83	14:45		X	sed. down. confl.	1 1 Tag # 3-16875	
M03-14	6/22/83	13:40		X	Rinsate from decon.	1 1 1,1,1-Trichloroethane/H ₂ O Octane contamination rinse Tag # 3-16876	
Relinquished by: (Signature)		Date / Time	Received by: (Signature)		Relinquished by: (Signature)	Date / Time	Received by: (Signature)
<i>Paul J. Schick</i>		6/29/83 1500	<i>Paul J. Schick</i>		<i>Paul J. Schick</i>	6/30/83 3:00 pm	<i>Paul J. Schick</i>
Relinquished by: (Signature)		Date / Time	Received by: (Signature)		Relinquished by: (Signature)	Date / Time	Received by: (Signature)
<i>Federal Express</i>		7/1/83 8:40	<i>Harriet Miller</i>				
Relinquished by: (Signature)		Date / Time	Received for Laboratory by: (Signature)		Date / Time	Remarks	
						Shipped Fed Exp	
						Airbill # 365775105 (RL)	768844300

IRG ITAL DTE VAL Y

59

Office of Enforcement

CHAIN OF CUSTODY RECORD

**Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106**

ENVIRONMENTAL PROTECTION AGENCY

Office of Enforcement

...ON -

Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Terrance A. Shannon	6/24/83 4 ⁰⁰ pm	Tom Fromm 6/24/83	Tom Fromm	6/24/83 4 ³⁰	Loren Laotky *
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Loren Laotky	6/30/83 8 ⁰³ pm (LRL)	Federal Express	7/1/83 8:40	James P. Miller	
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	Shipped Fed Exp 768844300 Airlift # 215775 115 (LRL)